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See Page 2

MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

BRUSSELS MOTOR SHOW EXHIBITS

See Page 7

VOL. LXXXII No. 2123 [Registered at the G.P.O. as a newspaper] LONDON, JANUARY 23, 1960 PRICE ONE SHILLING

CURRENT TOPICS

More Goes By Rail

JEREMIAHS who have freely predicted an early demise for rail transport are confounded. A definite upward trend became apparent towards the end of 1959 in freight carryings and passenger receipts on British Railways. Returns recently completed show that during the seven weeks ending December 18, 1959, the amount of steel carried by rail from the principal steel works totalled 1,433,000 tons—an increase of 285,000 tons, or nearly 25 per cent, compared with the corresponding period of 1958. The figures for merchandise traffic carried by freight train are also better. The tonnage carried during the three months ended November 29, 1959, totalled 9,512,000, an increase of 833,000 tons, or 9.6 per cent, compared with the comparable period of 1958. British Railways passenger receipts, too, bear out the resurgence. For the last four weeks of 1959 they showed an increase of £840,000, from £9,693,000 in the same period of 1958, to £10,533,000. Only part of this improvement is due to the increase in passenger fares in November; the rest comes from more traffic and is another indication of the trend for the better—first noticeable in August—in passenger traffic.

Record Christmas Mail

FURTHERMORE, the latest figures show that British Railways carried a record number of parcels and letters last Christmas. Special railway depots set up to handle Christmas parcels post at large centres dealt with 1,125,447 mail bags compared with 1,023,765 the previous Christmas—an increase of about 10 per cent. Receipts from parcels, letters and general merchandise carried by passenger train during the week ended December 27, amounted to £879,000, which was £133,000 more than in the corresponding period of 1958. The aggregate revenue from this traffic in the 52 weeks ended December 27 — £54,038,000 — was £1,257,000 up on the 1958 total for the same period. The improved receipts are a direct reflection of the increased volume of traffic, since rates remained unaltered throughout 1958 and 1959.

Roadrailer Experiments

ENCOURAGEMENT may also be taken from the development by British Railways of the roadrailer to obtain the benefit of road collection and delivery while using railway wagon characteristics for the trunk transit. Nearly three decades have elapsed since the Karrier Rorailer was tested by the L.M.S. and L.N.E. Railways. The present prototypes owe something to Chesapeake and Ohio ideas, but are a joint effort by British Railways and the Pressed Steel Co., Limited, of Oxford. On the road the new vehicle operates as the semi-trailer of a tractor-trailer outfit. At the road-rail exchange point, the rail wheels are let down and the rubber-tyred road wheels retracted. The trailer is coupled as a rail vehicle to the trailing end of the next preceding trailer, making a formation similar to the Spanish Talgo train. The roadrailer with an 11-ton payload capacity is due to undergo trials on the M.I.R.A. test track at Nuneaton, and as soon as two prototypes are available they will be tested on the railway between Bishop's Stortford and Braintree before showing off to potential users. This development could well revolutionise the earning capacity of the railway system and lift it permanently out of the red through the low cost of transhipment, which might prove no more difficult than coupling or uncoupling a tractor and semi-trailer.

The Railway Working Week

SIMULTANEOUS demands by the three railway unions for a shorter working week have added to the complications arising from the application of the National Union of Railwaymen for a substantial wages increase and the unofficial threat of a 24-hr. strike despite the undertaking given by Sir Brian Robertson in anticipation of the Guillebaud Committee's report. The demands are estimated by the B.T.C. to cost about £30 million. The N.U.R. and the A.S.L.E.F. requests a reduction from 44 to 40 hr. whilst the T.S.S.A., most of whose members already work a 42-hr. week, want a reduction to 38 hr. These latest claims, which will go through the negotiating machinery, have prompted *The Times* to remark upon the similarity between the task of the Guillebaud Committee and that being done by the pay research unit for the civil service, though with more authority to draw conclusions. If that is so then presumably, it states, the findings will be given effect whatever the cost, but no undertaking in that sense has been given either by the Government or the B.T.C. "If the civil service practice were to be followed then there might well have been an interim increase, without waiting for the report, on the grounds that there has been a rise of about four points in the general index of wage rates while the inquiry has been taking place, and the question of the working week would be automatically taken care of." Do the unions and the B.T.C. want to follow the civil service practice, it asks. Suggesting that both sides should make up their minds it says that obviously the B.T.C. cannot do so unless the Government makes up its mind first. Mr. Marples should interrupt his pre-occupation with roads and tackle this urgent question now that he has returned from America.

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Men Want Something Now

CONSIDERATION of the railway situation becomes the more urgent because of the unrest in the ranks of the N.U.R. As a result of this, the leaders of the union telephoned the chairman of the Commission on Tuesday of this week to ask for a meeting to discuss an immediate interim increase in wages. This step was decided upon after consideration of the difficult situation arising from letters and resolutions received from branches and district councils calling for direct action in protest at the time taken for the review of the wages structure. The executive of the N.U.R., said Mr. S. G. Greene, general secretary, hoped that members would support their action and reconsider the position. The union is anxious to retain public goodwill towards railwaymen and fears it will sacrifice sympathy with their cause through 24-hour token strikes or other demonstrations. The executive is confident that the Guillebaud report must be in favour of higher wages; the men cannot see why they must wait till April for the findings of this independent review. When the review was decided upon it was generally understood that the unions would await its report and the Transport Salaried Staffs Association and the Associated Society of Locomotive Engineers and Firemen have been content to do so, although the time lag has, no doubt, been longer than then contemplated. Any concession to the N.U.R. men would inevitably involve the other unions and would almost certainly need Government backing.

National Benzole Anniversary

FITTING commemoration of the fortieth anniversary of the founding of the National Benzole Company to market benzole, a by-product of coal, as a motor fuel was the publication on January 11 of a book by Edward Young entitled *Forty Years of Motoring*. The author has dealt with the subject from the viewpoint of the ordinary motorist and has produced an interesting historical account of the development of the motor car and all aspects of motoring from 1919 to the present. More than this, the book traces the history of the discovery of benzole and its commercial exploitation, at first in the artificial dyestuff industry from 1856 onwards and later, in the early 1900s, as a rival motor fuel to petrol. Inextricably bound up with motoring during the past forty years has been the National Benzole Company, which itself has developed from its original ten-foot-square office in the London headquarters of the Gas, Light and Coke Company of 1919 into one of the largest motor-fuel marketing companies in the country. *Forty Years of Motoring*, which is illustrated with 150 photographs, is published by Stanley Paul at 25s.

Road Competition in Nigeria

OPERATING revenue for the financial year ended March 31, 1959, states the annual report of the Nigerian Railway Corporation, was a record at £15,755,000, a figure which exceeded the earnings of the previous best year (1956-57) by almost £1,500,000. Not only was the revenue the best for any single year but there were also records in terms of effort and output as measured by total train-miles, ton-miles and train-miles per engine-hour, tons moved per wagon-day and practically every other statistical measurement, indicating "an excellent year's results." Notwithstanding this improvement on 1957-58 the figures would have been substantially better but for intensification of road competition in the latter half of 1958. Formerly confined to short distances, road transport is now being used increasingly for long hauls, and the railway is suffering heavy losses on traffic attracted by lower rates and a quicker door-to-door service, a movement stimulated by an increase in railway rates from July 1, 1958. This encouraged commercial interests "to seek more actively an alternative mode of transport," and the report speaks of "other constituents of a new political and commercial atmosphere in which the rapid development of a road system and transport are inevitable." Thus road competition over long distances has come to stay and must be so recognised in fixing the general level of railway charges, particularly for high-grade goods. Revision of the rates structure is under consideration so as to relate it more closely to the realities of the situation. Many fine distinctions in the nature and characteristics of commodities, as reflected in the goods classification, may now have to be ignored "in keeping with practice on the roads." The objective of rates adjustments, states the report, must be "to prevent the further expansion of nationally uneconomic road competition rather than to adopt a suicidal policy of reducing railway charges to uneconomical levels."

Inside Story of Rotella

NOW available on free loan from Shell-Mex and B.P., Ltd., in both 35- and 16-mm. gauges, is a new colour film entitled *The Inside Story*, which describes the development of Shell Rotella Multigrade oil for road transport vehicles. We formed the opinion during a recent London preview that this is one of the most successful examples we have seen of the popular treatment of a technical subject; it could so easily have become abstruse and carried many of the audience out of their depth. It avoids that error with skill. The story of the five years of research, development and road testing which preceded the marketing of Rotella Multigrade in 1958 is seen through the eyes of a technical journalist. The desirability of augmenting an engine lubricating oil, however good in itself, with additives to give a flat viscosity curve, thus gaining the advantages of greater fluidity at low temperature and considerable reserves of lubricating safety at high temperature, is explained and there is a simple description of the polymeric additives used and how they work, with practical demonstrations justifying the claims made. Other scenes describe how the Shell Thornton Research Centre tested various types of polymer and, after three years of research, the extensive and painstaking testing in road vehicles, at first for a year in Shell-Mex and B.P. vehicles and then for a further year in vehicles of other fleet operators. An independent operator's experience with the multi-grade oil in a mixed diesel and petrol fleet is shown to accord with the manufacturer's own findings—improved fuel consumption, easy starting, increased battery life and the convenience and greater security from the effects of human error of having only one grade of oil for all vehicles all the year round.

Signalmen's Omissions Cause Collision

A COLLISION which occurred in fog between Slade Green and Dartford, Southern Region, on February 17 last is attributed by Colonel W. P. Reed, Inspecting Officer of Railways, to faults by two signalmen. The 9.40 a.m. Charing Cross to Gillingham electric, which had been wrongly admitted into the block section after improper use of the release key, ran at about 15 m.p.h. into the 9.25 a.m. Charing Cross—Dartford electric which was stationary at the home signal near Crayford Spur A box. Three persons were slightly injured. The signalmen were A. J. Miller, aged 64 and with 32 years' experience, on duty at Crayford Creek junction box, and M. Blandford, aged 31, with four years' experience as a signalman, serving in Crayford Spur A box. Colonel Reed says: "I am satisfied that Miller omitted to give the train entering section message to Crayford Spur A box for the 9.25 a.m. down train, which he recorded as sent at 10.48 a.m., and that he was not given the train out of section message for this train which he recorded as having received at 10.50 a.m. He then failed to carry out the proper procedure for obtaining a second release for his starting signal instrument when he thought that the plunge from Crayford Spur A box had failed to release it. Blandford failed to carry out the elementary duty of making sure that he and Miller were talking about the same train when he was asked on the telephone to release the lock on his instrument and give the second plunge." The motorman of the stationary train also failed to sound his whistle. The inspecting officer states that the lock and block system is such as to ensure the integrity of the absolute block principle except for serious neglect of the regulations, as in this case.

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

Crossing the Channel

PROS and cons of the Channel Tunnel and other means of crossing the English Channel from England to France have recently become a matter of popular discussion. Thought has very properly been directed towards the possibilities of the tunnel by the British Transport Commission, which is closely concerned with its prospects; a preliminary investigation of geological conditions, civil engineering requirements and traffic potential has been carried out for a joint Anglo-French committee over the past three years; and the Suez Canal Company and other groups are attracted by the prospects of financing the project. It is now suggested in diplomatic circles that an agreement on tunnel procedure between Britain and France will be discussed when General de Gaulle visits London in April. Military objections — despite Field-Marshal Montgomery's fervent condemnation of all who toy with the idea—must be relatively insignificant in the age of rockets with atomic warheads. They probably always were, but became unduly magnified through moves in the warfare, not between nations, but between the London, Chatham and Dover and South Eastern Railways when the South Eastern interests were actually making progress with a pilot tunnel at Shakespeare Cliff nearly 80 years ago.

Tunnel Potentialities

IF it is accepted that facilities beget traffic, the potentialities of a heavy traffic flow through a tunnel are immense. *La Manche* and the probability, as it seems to them, of incurring seasickness or airsickness in crossing it, is a bigger obstacle to Continentals coming to Britain than it is for Englishmen bound for European destinations; for both, through services would be an immense attraction. The present flow of holidaymakers from this country to Europe is only a trickle compared with what might be developed. Closer European commercial unity may well generate a very considerable two-way freight traffic, in containers or through wagons. The difference in loading gauge between our railways and the Continent is an obvious handicap; after spending £120 million or more on the tunnel a further very considerable sum would be needed to adapt the Southern Region to take standard European coaches or to provide a new route to London. Even such measures would still not provide for through sleepers from, say, Glasgow, or Manchester to Paris, Rome or Hamburg, although no doubt a certain amount of compromise stock, similar to that for the *Night Ferry*, could be built. To overcome some of these difficulties an international station at the north portal of the tunnel might serve for interchange between Southern trains and those of the European administrations; those for such destinations as Cologne or points south of Paris need not stop in Northern France after leaving the tunnel. Local service through the tunnel would be provided in any event by the motor car and road freight vehicle transporter trains, a road tunnel being considered an unlikely achievement, if only because of exhaust and ventilation problems, let alone that of driving 30 miles in a confined space.

B.T.C. Air Investment?

MUCH has been made by those indifferent to the attractions of the tunnel of recent air transport developments. These are the proposed investment by the British Transport Commission in the Silver City air transport undertaking; the development of the Rotodyne combination of helicopter and conventional aircraft characteristics; and the potentialities of the Hovercraft. As to the first, this is a logical development of the interest taken over 30 years ago by the four main-line railway companies in air transport operation. As soon as the railways obtained general road transport powers under their Acts of 1928 they set to work, as Sir John Elliot has had occasion to point out in a letter to *The Times*, to obtain sanction for aviation activities. Under Sir Harold Hartley, then a vice-president of the L.M.S.R., Railway Air Services and the Southern and Great Western partnership in Channel Islands Airways laid the foundations of what are now internal services of the British European Airways Corporation. Such investment did not imply any weakening of the companies' interests in rail transport. Neither need a less than 50 per cent interest in Silver City imply that the Southern Region is about to throw in its hand with roll-on-roll-off ships. In our view there is room for both and the services provided by both media will be needed to keep up with ever-expanding public demand. The Channel Tunnel—which necessarily will take some considerable time to complete—will no doubt in its turn fit into the pattern of meeting urgent requirements of more and more motorists who will want to venture abroad. Similarly, when the Rotodyne is developed and in public service with B.E.A., it is highly unlikely that it will sweep the pool and be able to capture all the traffic offering. A similar conclusion is not unreasonable regarding the Hovercraft, however well that is eventually able to act as a substitute for the cross-Channel ship.

Hovercraft Scope

A FAST Hovercraft cross-Channel ferry, with an all-up weight of 1,000 and an empty weight of 500 tons, is likely to cost about £4 million. A pair of such craft could ferry to and from the Continent yearly 3 million tons of freight, or 1½ million cars and 10 million people, or alternatively 30 million people. These figures were given to members of the Southampton branch of the Royal Aeronautical Society by Mr. C. S. Cockerell, the Hovercraft pioneer, who was not unnaturally disparaging of the Channel Tunnel. The Hovercraft cost compared, he claimed, with £30 million for a fleet of 60 suitable aircraft, or about the same capital expenditure, but at a surface speed of about 16 knots, for a fleet of 10 conventional ferries. "However," he admitted, "there are still many Hovercraft problems to be solved, and it will be quite a number of years before such a large craft will be built. By that time some of the potential developments known to exist in the laboratory can be incorporated in the design. One of these Hovercraft would do the work of five or six 4,000-ton conventional ferries." Since, given a clear run, the time from Dover to Calais would be only about 15 min. in the Hovercraft, both the design of the craft and the loading and unloading arrangements must be arranged for a quick turnround. Although not ideal from a structural point of view, the best arrangement would seem to be numerous doors along each side of the parallel-sided craft, the cars being run in transversely. To secure the best utilisation Hovercraft termini should be located away from existing harbour works, Mr. Cockerell suggested. All that, nonetheless, seems farther in the future and more limited in scope than the tunnel need be.

NEWS SUMMARY

COMMERCIAL vehicles at the Brussels Motor Show, details of which are given on page 7 of this issue, include a new F.N. service bus powered by two Perkins diesel engines mounted at the rear driving through Self-Changing Gears transmission. A feature of the exhibition is the large number of European commercial vehicles embodying British-built or British-licence running units and components.

Dodge Brothers (Britain), Limited, has reintroduced light and heavy versions of its passenger chassis to the home market for the first time since the war. A forward-control chassis in two wheelbase lengths and with choice of petrol or diesel engine, it has been available for export only in recent years.

British Railways, in conjunction with the Pressed Steel Company, has on trial at M.I.R.A. an "amphibian" road and rail vehicle for door-to-door transits. (Notes on page 1; illustration, page 16.)

Enforcement of the traffic-freeing no-parking regulations in the "pink zone" of London's West End is continuing after January 16 for an indefinite period, but most of the special Christmas car parks are now closed. Mr. Ernest Marples hopes to introduce permanent arrangements over a wider area as soon as possible.

In written evidence to the Royal Commission on Local Government the Ministry of Transport suggested an overall highway and traffic authority for the Metropolitan Police Area. In oral evidence, Mr. L. J. Dunnett, Permanent Secretary of the Ministry, agreed that highways and traffic had a considerable effect on the people: if a top-tier authority was desirable in other fields that body should perhaps also be responsible for traffic management.

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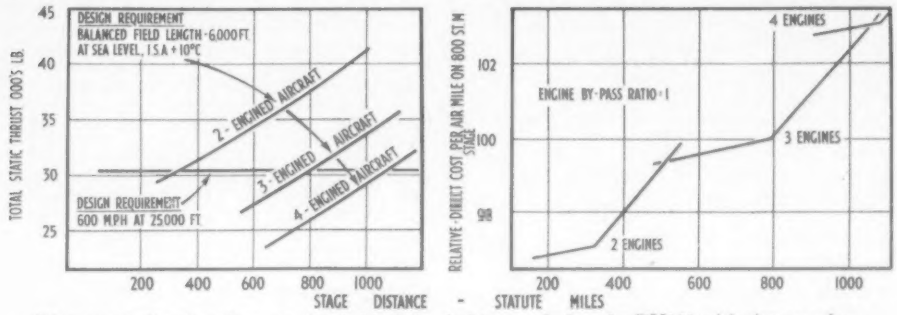
LOOKING TO THE FUTURE

Production of the DH 121

ADVANCED DESIGN FOR LONG LIFE

COMBINING the endeavours of de Havilland, Hunting Aircraft and Fairey Aviation as aircraft manufacturers with those of Rolls-Royce as engine builders, the Aircraft Manufacturing Co., Limited, is hard at work on the Airco DH121 following the order for 24, with an option on a further 12, placed by British European Airways. It may be recalled that the design, to meet a B.E.A. specification, was intended to carry a load of moderate size at very high speeds over short-stage routes. While the British corporation has a very large number of services with stages of less—often much less—than 1,000 miles, it is, of course, the case that more than half the traffic carried by airlines in all parts of the world travels on stages of from 200 to 1,200 miles. Production of an aircraft for such work obviously opens a large potential market since there must come a time when the Viscounts, Convairs and Martins will begin to be relegated to secondary services and also there are still many DC3s to be replaced.



Diagrams indicating the reasoning behind the decision to design the DH121 with three engines

Accepting the scope for sales that exists, it next becomes necessary to relate thereto the suitability of the aircraft and, equally important, its delivery potential. The first 121 should fly late next year and the first for B.E.A. is likely to be handed over in mid-1963. Planned production envisages an output of six a month and it is reasonably expected that 100 will have been built by the end of 1964. The extent to which this number exceeds the order so far placed is some measure of the faith which the partners in Airco have in their product, but it is one thing to have faith and another to justify it. To achieve this second condition the aircraft must be sold and a great deal of preparatory work has been done with that in mind. It can, indeed, be said that with Comet experience to form a substantial background and with Rolls-Royce progress with by-pass turbo-jet engines it has been found possible to provide far firmer facts on design and performance than is normally possible at this stage of development.

Swept Wing

Overall length of the fuselage is 104 ft., its outside diameter is 12 ft. 1½ in. and its inside diameter 11 ft. 7½ in. The span of the wing is 89 ft. 10 in. and its gross area is 1,350 sq. ft. With the three engines mounted at the rear of the aircraft, two being cantilevered out from the sides of the aft fuselage and the third mounted in a pod in the fuselage to the rear of all major structional members, the wing could be designed primarily for optimum aerodynamic efficiency with a sweep angle of 35 deg. and a section shaped so that this angle is aerodynamically effective along the whole span. It follows that the 121 has a normal operating limit Mach number of 0.875 above 24,000 ft. and a maximum economy cruising speed of Mach 0.87 at 32,000 ft., which is, in fact, only 21 m.p.h. below the maximum speed of the aircraft.

This is, of course, most satisfactory but benefits can easily be much reduced, or almost nullified, if the aircraft has not good take-off and landing characteristics. The matter of the all-up weight is also of moment in this connection. The maximum is 105,000 lb., but what is especially valuable is the ability to land at 100,000 lb., or 95 per cent of the maximum take-off weight. It will thus be possible to operate stopping services without having to refuel. Distance required for take-off at that weight is 6,000 ft. in still air conditions while for shorter ranges with less fuel it is of the order of 5,000 ft. Low approach speeds and good landing characteristics are brought about with large double-slotted flaps, which, when deflected also droop the leading edge. Conventional air brakes and lift dumpers for use on the landing run are fitted and further air braking effect can be achieved either by lowering the undercarriage or by using the reverse thrust of the two outer engines in the air.

Apart from the research work by the principals, there has been, and will be, a substantial contribution to the effort by some of the principal suppliers. Among these are the B.T.H. (A.E.I.) power generator systems, the Automotive Products hydraulics and nose undercarriage, Dunlop wheels, tyres and brakes, I.C.I. plastics and Smiths aircraft instruments. Lateral control is provided by simple divided ailerons, only the inner sections of which operate at high Mach numbers. The tailplane is mounted high on the fin and is thus well clear of both the wing's wake and the reverse thrust efflux, while conferring the necessary stability for the least area. It also acts as an end plate to the fin, the effectiveness of which is increased for a given area and its actual dimensions reduced. The tailplane is all-moving and has a geared elevator. This particular arrangement has given very satisfactory results throughout the speed range of the de Havilland Sea Vixen, on which it has been developed, and is held to be the only type of pitch control to give a really satisfactory answer to the problems of high Mach number operation.

Very naturally great emphasis is laid upon safety in all aspects of design. Structurally the aim is to achieve a very long working life, for among the basic advantages claimed for the machine are that its high speed—maximum cruise in excess of 600 m.p.h. — and low operating costs should render it secure from supercession for a number of years. Fail safe features in the form of duplicated members or crack stoppers are provided where practicable and adequate safe lives are being achieved on those portions of structure where alternative load paths are not feasible or which cannot easily be inspected.

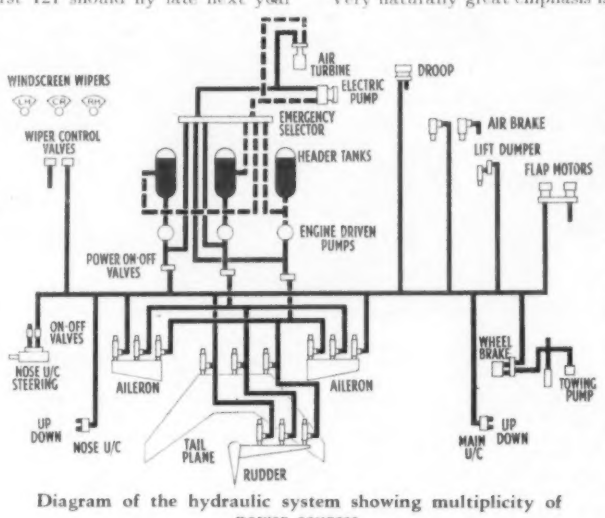
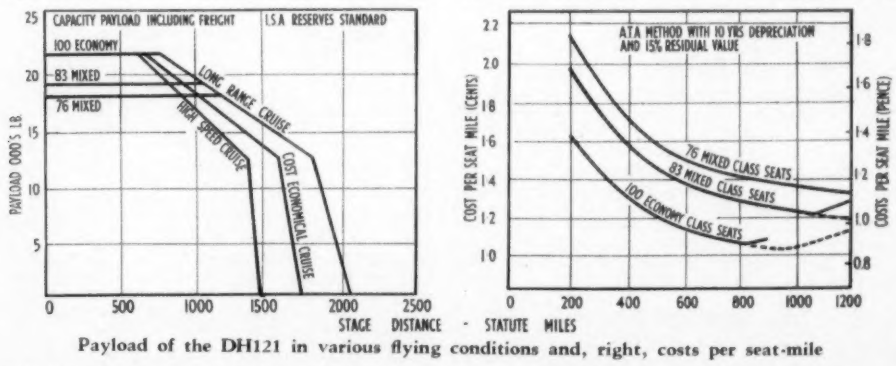


Diagram of the hydraulic system showing multiplicity of power sources

Apart from the actual structure the power units and the various systems have also been selected with safety firmly in mind. The decision to have three engines may be followed by reference to two of the accompanying graphs which show clearly that having determined the amount of thrust required at 30,000 lb. the use of three units each giving 10,100 lb. came nearest to giving the exact performance required while providing also a high degree of multi-engine safety yet costing less than a four-engine installation and obviating both excessive power availability on take-off and the costly wing design complications which would have arisen with a twin-engined machine. Yet another safety measure is the use of all three engines to provide the services for the systems and we reproduce a diagram of the hydraulics to typify this. From this it will be seen that in the event of an engine failing the others can maintain services to the full, while there is an independent supply available when all engines are stopped.

Looking into the future careful provision has been made to enable all the latest control systems to be installed without any major redesign work and the production aircraft will embody equipment providing automatic flare-out for landing. Later it may be expected that experience will bring fully automatic landings. Presentation of instruments to the crew has also received particular attention. Finally should be mentioned the matter of operating costs and here again this is displayed in a graph setting them out per seat-mile in accordance with the A.T.A. method allowing 10-year depreciation and a 15 per cent residual value. Thus it will be seen that as a 100-seater these work out at less than 1d. per mile on an 800-mile stage and less than 1½d. a mile on a 200-mile stage. It is hard to ask for figures much better than that at 600 m.p.h.



Payload of the DH121 in various flying conditions and, right, costs per seat-mile

PROVIDENT MUTUAL

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A *It is a tubular rivet assembled on a headed steel mandrel.*

Q In what sizes and materials are 'Pop' rivets supplied?
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Q What is the operating principle?
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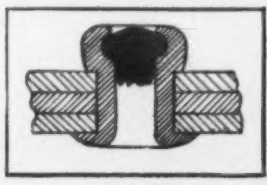

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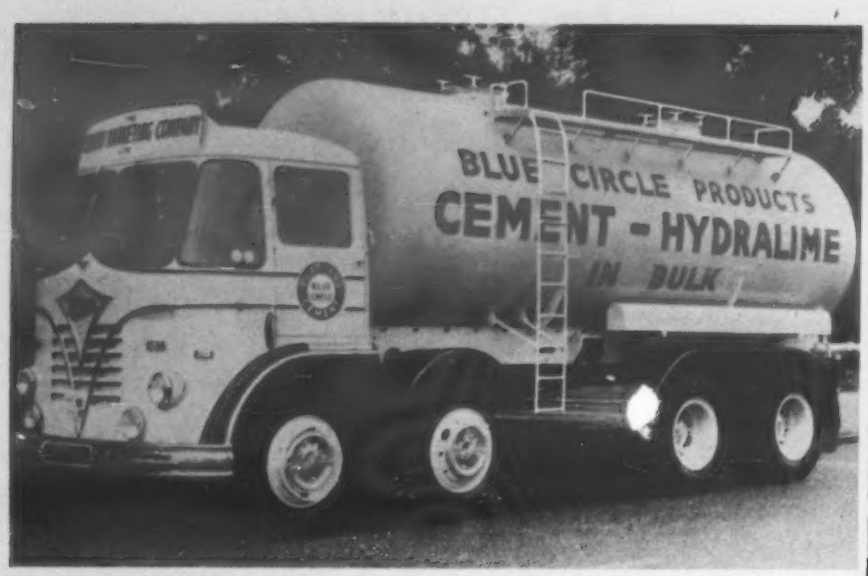

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LORRY—BUS—COACH

Mobile Shops : Hours and Records Fines

SAID to operate a fleet of 15 mobile shops, a Reading grocery retailer, Bayliss, Limited, was fined a total of £467 at Reading magistrates' court on Monday this week and was ordered to pay 50 guineas advocate's fee for offences regarding drivers' hours and records. The company pleaded guilty to a total of 178 summonses, which included 67 in respect of failing to keep drivers' records, 51 for permitting vehicles to be driven for a continuous period of five and a half hours, 51 summonses in respect of permitting vehicles to be driven for a continuous period amounting in the aggregate to more than 11 hours in a period of 24 hours, and nine summonses of permitting vehicles to be driven so that the driver had less than 10 hours' consecutive rest in a period of 24 hours. Fifteen of the firm's drivers were fined a total of £148 10s. for failing to keep records of work, driving excessive hours and failing to take the regulation number of hours rest.

Salford Accounts

SALFORD City Transport carried two million fewer passengers in the year ended March 31, 1959, than the previous year; receipts were up by £111,663 through an increase in fares. The accounts show a surplus of £64,396, the third surplus in 10 years, but Mr. C. W. Baroth, general manager, says that the accounts for the current year are certain to show a deficit, due to wages increases and £82,500 provision for income tax.

Pickfords v S.A.R. This Time

THE general manager of South African Railways intervened when he found that a private road haulier was delivering architectural panels from Cape Town for the new Johannesburg station concourse, the National Transport Commission was told at a recent sitting in Cape Town. The commission was hearing an appeal by the railways against a decision of the Cape Town local road transportation board granting temporary certificates to Pickfords (S.A.), Limited, to convey the panels from Cape Town to Bloemfontein and the Rand for new buildings. The panels were said to be easily damaged if the corners were bumped in transport and it was alleged that S.A.R. had declined to transport the panels, so Pickfords' road vans were used. The vans had delivered about 20 consignments to Johannesburg when the general manager of South African Railways saw one of the Pickfords vans unloading at the station. A legal representative for the railways said that they had refused to carry the panels under the impression that they were too large to fit into their container trailers. Decision was reserved on the application. [Pickfords, S.A., was a former subsidiary of the U.K. company.—Editor.]

Salisbury—Nairobi Service

COACH services between Salisbury and the Copperbelt and Salisbury and Nairobi will open later this year—probably March 1—the operator, Express Motorways, announces. Express Motorways is a new subsidiary of the Rhodesia United Transport, Limited, group. The service to the Copperbelt will operate twice a week, take about 24 hours—breakfast to breakfast—and cost £7 8s. single. The twice-monthly Salisbury to Nairobi journey will take five days and four nights and cost £45, exclusive of meals.

Saturday Working in Glasgow

EMPLOYEES of Glasgow Corporation Transport Department are not to have one Saturday off in six instead of one in 12, the conditions of service sub-committee has decided. The claim was rejected on the ground of inconvenience to the general public (because of the existing staff shortage) and because of the heavy financial loss to the department. It was also pointed out that the extra work of rescheduling Saturday operations would slow down scheduling already in hand for the tramway conversion scheme.

Appeal Order Reversed

ONLY four days before T. Brady and Sons, of Barrow, were due to have two vehicles deleted from their A-licence, following an appeal to the Transport Tribunal by objectors against a grant by the Northern area Licensing Authority in May last year, they were granted three additional vehicles (two articulated units and an eight-wheeler) at Barrow last week. They had applied for four additional vehicles and there were eight objectors. Mr. J. Ullock on their behalf said that, after taking advice, they were of the opinion that the additional evidence required by the Tribunal could be provided by a complete breakdown and analysis of the figures, without recalling customers. If the two new vehicles put on the road after the last grant were removed the effects would be disastrous. Mr. Robert Brady, a partner, said that interchangeable trailers were used with the articulated tractors for internal loading, but because they had insufficient licensed vehicles, loaded trailers were standing at their depot for as long as 12 days before being dispatched. He agreed there had been rate-cutting in the area, but Brady's rates were higher than the majority of their competitors and they were prepared to hand in full details to the licensing authority if the objectors would do the same.

After Mr. F. J. McHugh, for the objectors, had submitted that a fatal flaw in the application was the absence of customer witnesses, Mr. J. A. T. Hanlon (the licensing authority) said that the Tribunal had reversed his previous decision on the grounds that the figures were inadequate, and the removal of the vehicles had been delayed to give Brady's a chance to make a fresh application. The present figures showed that the vehicles put on the road after the last grant had been working over and above their capacity and this alone was proof of need. There was overwhelming evidence of pressure and the partners were working night and day as the only means of satisfying their customers. In its judgment on the original application the Tribunal said in December that no need was proved for the two-vehicle grant; that no evidence was given of an unsatisfied demand for transport; there was no material evidence of being unable to meet requirements; and that there was no evidence of hiring. It was on these grounds that the grant was ordered to be set aside.

S.U.T. Foothold in I.o.M.

AUTHORITY was granted to Sheffield United Tours, Limited, by Douglas Town Council last week to operate a coach in the Isle of Man in connection with its inclusive tours to the island during the coming season. Douglas Health Committee is responsible for the issue of all vehicle licenses and had recommended by five votes to two that S.U.T. be granted a licence on condition that only passengers who had booked a return tour from Sheffield would be carried and that the coach would not ply for hire on any coach stand on the island.

A Strachan medium bus body, based on the Thames Trader low-loading chassis. It is a 24-seater for H. McLachlan, of Bridge of Cally, near Blairgowrie

A deputation from the Isle of Man Coach Owners' Association strongly opposed the issue of a licence. It was stated that 15,000 people booked to the Isle of Man by S.U.T. service in 1959.

State of the Bus World in 1958-59

FROM the annual *Statistics of Public Road Passenger Transport in Great Britain, 1958-59*, issued by the Ministry of Transport this week (H.M.S.O., price 1s. 3d.), it is learned that the total number of buses and coaches fell at the end of 1958 to 73,462 from 74,306. The net fall was almost entirely confined to single-deckers, which were 805 fewer at 36,457; there were only 39 fewer double-deckers. All these figures include London Transport, which actually disposed of 312 double-deckers and 67 single-deckers during the year. Trolleybuses fell from 3,438 to 3,364. Taking the 1953 fares index as 100, London Transport road fares at September, 1959, stood at 130, municipal fares at 133 and other operators' fares at 130. Operational statistics for London Transport show that buses and coaches (Central and Country services lumped together) took 35.85d. per mile in 1958 against expenditure of 37.07d. per mile, while the now disappearing trolleybuses earned 38.95d. p.m. against expenditure of 40.08d. p.m.

Aldridge Service to Birmingham

DISCUSSIONS are to be held between Aldridge (Staffs) Urban District Council and Birmingham City Transport to see if a direct service into the city can be provided. Although Aldridge has grown from a village to a large town in the last two decades and its centre is only 10 miles from Birmingham Town Hall, it is necessary to travel via Walsall to get from one place to the other. Birmingham operates its longest internal service from the southern boundary of the city at Hall Green across the centre and into Aldridge for a short distance at Pheasey but does not touch the centre of the urban district. Harper Brothers (Heath Hayes), Limited, recently applied for a service into the city which would have partly satisfied the demand from Aldridge but the West Midland area Traffic Commissioners refused a licence.

Bus and Coach Developments

David MacBrayne, Limited, applies for excursions and tours from Ullapool.

G. H. Yeomans' Motors, Limited, Canon Pyon, seeks the licences of G. H. Yeomans.

Central Motors (Ripponden), Limited, applies for the excursions and tours from Sowerby Bridge of Ryburn Tours (W. Waldron).

South Wales Transport Co., Limited, is applying to pick up passengers for its extended tours at points used by Yeomans, Miller and Co. (Tours and Travel), Limited.

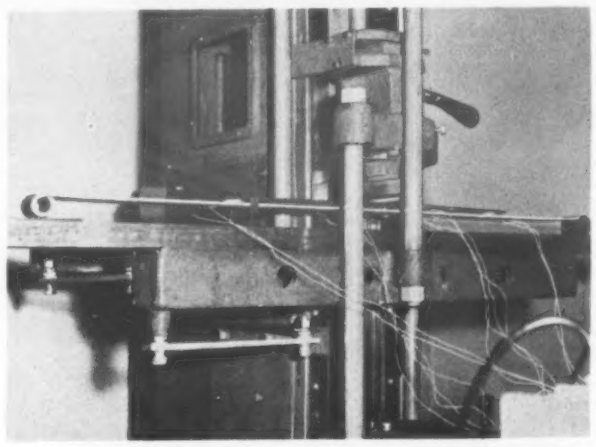
On the recent hearing of a Motion for Judgment in the Chancery Division of the High Court, Mr. Justice Lloyd-Jacob made an order by consent restraining Crofts (Engineers), Limited, from infringing the plaintiff's Letters Patent No. 538,043 which relate to hydraulic couplings, and ordered the defendants to pay to Fluidrive Patents, Limited, a sum of £450 by way of agreed damages in respect of infringements of the patent and the plaintiffs costs.

RATIONALISING THE LEAF SPRING

New Basis for Design by Toledo Woodhead

ON page 1 of our issue dated January 16 we referred to recent research and development work by Toledo Woodhead Springs, Limited, Sheffield, in association with Plint and Partners, Limited, Wargrave, from which has been evolved a new and more rational basis for the design of leaf springs for motor vehicles. Notwithstanding improvements in materials and methods of production, the fundamental design of the steel-plate spring has changed little since the seventeenth century, when a Lambeth coachmaker named Elliot patented a spring of this type and thereafter equipped many of the horse carriages built in London at the time.

The modern conventional leaf spring is a cheap, efficient and relatively trouble-free component and it has the advantage over many other forms of suspension that it can be given sufficient stiffness, without interfering seriously with its main function, to provide for axle location and driving and braking torque reactions. In fact, according to Toledo Woodhead Springs, it is this very success that has led to the neglect of the leaf spring as an engineering problem both by designers and development engineers. Current designs have evolved on a largely empirical basis and the resultant approximate treatment that appears in textbooks, while being adequate for the determination of spring rate and giving at least an idea of spring stresses, does not pass examination for the modern vehicle.



Toledo Woodhead two-leaf spring under test with strain gauges attached at various points; the flatness of the plates under load can be observed and their taper towards the ends and the thickened eyes for greater strength at this vital point are also discernible

The Rational Approach

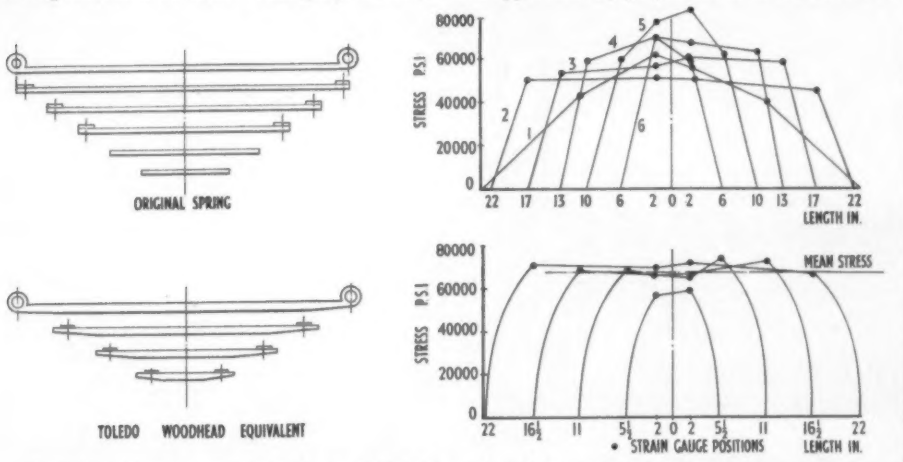
The company started from the premise that although methods of rational mathematical analysis were worked out many years ago, their nature is tedious and their implications appear to have been disregarded. The modern multi-leaf spring departs seriously from the ideal of constant stress throughout the material and is in most cases primitive in design and wasteful of material. This premise led Toledo Woodhead to make a new examination of the problem, starting from first principles, and results, it is said, have been startling. Using rational mathematical methods, new principles of design have been evolved leading to the production of springs in which, it is claimed, the ideal of uniform stress is approached far more closely than in the past, with correspondingly large savings in material and cost.

In broad terms, the new approach results in using plate of varying thickness, both between one leaf and another and in individual leaves, directly related to the calculated stresses. Such springs, compared with the conventional units they replace, have fewer leaves, showing savings in weight of between 25 and 35 per cent and have much more uniform stress distribution and better shape. The new springs have been named Featherlight.

Typical Performance

An example is given in the accompanying illustration, in which a six-leaf spring in current production weighing 23¼ lb. is compared with a four-leaf Toledo Woodhead equivalent weighing 16¼ lb. This shows stress distributions at the working load based on actual strain-gauge measurements at the points indicated; it will be noted that whereas the stress variation from leaf to leaf in the six-leaf unit is considerable and the maximum measured stress is 83,000 p.s.i., the Toledo Woodhead unit shows a marked uniformity and a maximum stress of 74,000 p.s.i. Similar results have been obtained with much larger springs up to heavy commercial vehicle size, while tests of Featherlight springs fitted to vehicles in service have proved equally satisfactory. The saving in weight of springs on an average 12-ton gross goods vehicle would be about 1½ cwt.

The company says that results are not dependent on extreme accuracy of manufacture and that the dimensional accuracy of the Toledo Woodhead spring used in the test to produce the results illustrated was in fact rather lower than that of the corresponding conventional spring. Having experienced great difficulty in acquiring machines to produce its new springs, the company has in the end had to design and build its own machines before series production of Featherlight springs could be started. So far, only single-rate springs are in production, but examination of the more complex problems of providing variable-rate characteristics while retaining the advantages of the new design is proceeding.



Drawing shows a conventional six-leaf spring and (below) a Toledo Woodhead spring of equivalent capacity, with the recorded stresses under similar loading of each on the right

Pitch and Roll Indicator

The need for a comparatively simple means of assessing and providing a permanent record of vehicle ride has become apparent to Toledo Woodhead Springs, Limited, in its capacity as a manufacturer of springs and, again in collaboration with its consultants, Plint and Partners, it has developed a compact self-contained instrument weighing only 30 lb. that is now being marketed as the Toledo Woodhead-Plint pitch and roll indicator. The need for such an instrument was emphasised when Plint and Partners undertook development of the Gyreacta transmission, which is being used experimentally in a B.M.M.O. bus, and it became necessary to assess accurately the effects on vehicle stability of the heavy Gyreacta flywheel, the basis of the Clerk Gyreacta, which absorbs kinetic energy when the vehicle is slowing down and gives it up again to augment acceleration.

Pitching and rolling movements of a vehicle can be ascertained by comparing the angular position of the vehicle at any instant with a line that remains fixed in space. In the pitch and roll indicator the datum line is provided by a freely suspended gyroscope, which is positioned with its axis approximately perpendicular to the surface on which the vehicle is travelling. The gyroscope carries a pointer which moves across a recording surface so arranged in the body of the instrument that it follows the angular movements of the vehicle body. The spark-type recording device, which is frictionless and is the subject of patent application, produces simultaneous permanent records of movements in pitch and roll that are available for inspection within six seconds of being taken.

PUBLICATIONS RECEIVED

THE 125 YEAR BOOK OF 600. This intriguing title marks the souvenir book produced by the 600 Group to commemorate the 125th anniversary of the foundation of the George Cohen business in 1834. As a history was issued at the time of the centenary in 1934, and several volumes would be required to describe developments in the past quarter-century—a "daunting addition to the pitiless avalanche of reading matter which nowadays descends unremittingly on office desks"—it was decided to reproduce 125 humorous drawings or cartoons from the group's quarterly house magazine. This witty selection is supplemented by 10 maxims for management, depicted saucily in colour and, on a serious note, the book finishes with 25 photographs of the group's business activities.

PLASTICS SERVE EVERYMAN. The widespread use of plastics in modern life is described in this 12-page illustrated booklet published by the Distillers Plastics Group, Devonshire House, Piccadilly, London, W.1. The use of synthetic resins in paint is mentioned, as well as little-realised applications in the building and engineering industries, and prominence is given to the widespread use of plastics in various forms of transport.

THE TRANSVEYOR. A new leaflet published by J. Collis and Sons, Limited, Regent Square, Grays Inn Road, London, W.C.1, describing and illustrating a new heavy-duty version of its patented TransVeyor ball assembly conveyor system. Each assembly comprises a carbon chrome steel ball cradled in 100 small steel balls in a hardened hemispherical housing, which can be mounted in a variety of equipment and combinations to provide omnidirectional transfer facilities for heavy pieces with a minimum of effort.

SIF-TIPS, Summer 1959. Volume 25. No. 106 of this useful quarterly published by the Suffolk Iron Foundry (1920), Limited, Sifbronze Works, Stowmarket, as well as its usual helpful miscellany of hints, tips and articles on efficient welding contains a series of illustrations of repair and reclamation of various light-alloy vehicle components carried out at the Chiswick Works of London Transport

BS449·1959—AN EXPLANATORY BROCHURE. By Lewis E. Kent, B.Sc., M.Inst.C.E., M.I.Struct.E., M.Cons.E. Published by the British Constructional Steelwork Association, 94-96 Petty France, London, S.W.1, price 3s. 6d., post free. Twelfth in the series of publications issued by this association covering aspects of the design of structural steelwork, the present brochure outlines and illustrates the differences between the old standard, BS449:1948, and the latest standard.

LIGHTING FOR INDUSTRIAL ROADS. A handy leaflet issued by A.E.I. Lamp and Lighting Co., Limited, illustrating typical Mazda lamps and streetlighting columns for industrial use. The basic rules and factors which affect planning are also explained.

CROFTS RADIATION COMBINED SPUR GEAR AND WORM DOUBLE REDUCTION GEAR UNITS. A new publication by Crofts (Engineers), Limited, Bradford, which illustrates and describes a range of gear units in 12 sizes covering powers up to 60 h.p. and ratios from 300 to 30 to 1. Comprehensive dimensional and performance data are included.

MAZDA LAMP PRICE LIST. Now available from A.E.I. Lamp and Lighting Co., Limited, is a new pocket-size price list of its Mazda lamps. The list tables in condensed form all lamps readily available, with the exception of photograph and projector lamps. Also included in the booklet is a centre section of display material.

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GOVERNMENT AND ROADS AND ROAD TRANSPORT

4—The Future

By L. J. DUNNETT, C.B., C.B.E., Permanent Secretary, Ministry of Transport*

IT will not have escaped your attention that in each section of my talk there has emerged one very powerful, if not controlling, factor. This is the use of private transport. In 1948, only £105 million out of £462 million was spent on motoring. In 1958 this had risen to £726 million out of £1,247 million, or, measured in real terms, consumers' expenditure on operating motor cars and motor cycles rose four-fold and on buying them nearly seven-fold; and their total expenditure on these items in 1958 accounted for nearly 5 per cent of all consumer expenditure.

This heavy and increasing emphasis on personal transport appears to be a characteristic feature of societies in which the levels of consumption are high. In the United States the proportion of consumers' expenditure going on the purchase and use of motor cars has reached 10¼ per cent. As the national income rises here we must expect to see private motoring continuing to grow rapidly. The growth of private transport has emerged as a potential threat to our basic public transport system. To take one example, the bus companies maintain a large number of unremunerative services out of the profits which they make on remunerative routes, but in recent years a number of factors have emerged to make their remunerative routes less profitable and their unremunerative routes even more so.

Coming to Terms

So, too, on the roads. The existing road programme is designed to free the flow of industrial traffic, future plans will have increasingly to be based on the needs of traffic as a whole. And of the total traffic, private vehicles are likely to be by far the faster growing element. As far as can be seen, there is no limit to the potential growth in the numbers of private cars in use. Indeed, as we see in the U.S.A., the Utopian state of one car one family may by no means be the end.

In the whole field of transport policy, therefore, it is necessary to come to terms with private transport. Many suggestions have been made from time to time in this connection. There are those who believe that the carriage of goods should be channelled back to the railways which were designed for the purpose and are increasingly equipped to provide an efficient modern system. In the case of passenger transport, there have been suggestions that the private car should in general be kept out of congested city centres and reliance placed on buses or tubes. Many think that there is something anti-social in the long lines of cars, each carrying one person, which daily advance on our cities; but the system of the "car pool" which is common in other countries, under which a number of neighbours group together to use their cars in turn for journeys into town, might well be even more inimical to the public transport system.

Pattern of Living

These questions appear to me to touch on a fundamental problem and a problem which affects not only this year and next, but probably the whole of the remainder of this century. The problem may be summed up in the statement that transport is now such an important part of our economy and our society that the decisions which we take about it may well affect our whole pattern of living in the decades ahead. What are the main ingredients of this problem?

First, we are essentially a nation which lives by trade. Transport is one of the principal sinews of trade and must, in the interests of our economic expansion, be nourished by all possible means. Second, we live in a small, crowded island. We cannot expand over vast deserts, prairies or steppes. In order to make life tolerable in this congested area, we must form a view of the pattern of transport we want to see develop. We have therefore so to shape our transport system that, while meeting the primary economic requirement, it creates a social environment which will be acceptable and, if possible, even desirable. Third, we must consider how a balance can be maintained between public and private transport. I suggest that this is not only desirable in itself but also essential to any reasonable solution of the social problem.

Preserving Amenities

We have not yet seen in this country the full rigours of an automobile society subject to no restraints. It is true that we have seen one side of the coin, namely the pressure of an ever-increasing rate of traffic on a road system inadequate to meet the demands made on it. This leads now to arterial congestion and there are many who predict that it will shortly result in strangulation. In solving this problem we must take care to avoid devastating our cities. We are all familiar with cases where the provision of roads to facilitate the movement of private cars has failed to cure the problem of congestion and has at the same time gone far towards destroying the pleasures of urban life. I think that it is possible both to preserve our cities and to provide adequate facilities for the movement of people, goods and vehicles, but if this is to be done it will have to be more than an engineering exercise. It will have to be a combined operation of planners, architects and engineers. It will be basically an exercise in town planning. The pattern of roads may well determine the pattern of cities. The availability of transport can control the prosperity or the decay of localities. These are problems of a very different order from those which faced Telford.

These considerations point to a general conclusion which is not, I think, always sufficiently recognised by critics of Government action and policy. This conclusion is that, at the level of general policy, it is impossible to treat transport as an exact science. So-called "transport policy" deals with questions which involve economic, social and moral problems where value judgments are unavoidable. It has been said that if you want to set up a body of economists to advise you on an economic problem you can more or less determine the answer you will get by choosing the economists you pick to examine it. I think that you run the same risk by seeking to treat transport as if it were a narrowly technical subject.

Who Pays?

Whether you like or dislike the policy which at present rules in the field of transport, it at least has the merit that people know what it is costing the country. Once you introduce measures which provide that certain types of traffic must go by certain means of transport you have no obvious means of judging to what extent costs are thereby being increased. There are many suggestions for overruling purely economic tests in the provision of transport facilities. One formulation is to argue that transport should be regarded primarily as a "service" in the sense that facilities should be provided whether or not the users are prepared to pay enough to cover the costs. Now, services which are not paid for by the actual users have to be paid for by someone else.

This at once raises delicate problems. If the money is obtained from other transport users it is not easy to ensure that those people pay who can best afford to do so, and the level of charges which the transport undertaking must fix may place it at a competitive disadvantage. If the money is obtained from a source outside the transport undertaking problems will arise of the proper relationship between the undertaking and the source of the funds. I am not, of course, suggesting that unprofitable services ought not to be provided—there is often a good, indeed a necessary, case for them—but the question of whether they should be provided is not one that can be sidestepped by ingenious devices.

Track Costs

We hear a good deal nowadays about the doctrine of pooling track costs. This is a highly complicated subject on which a great deal of learned matter has been written. I do not propose to go into it in detail. I might, however, raise the question how much better off one is likely to be at the end of the exercise. In the first place, some of the arguments in favour of the pooling of track costs seem to me to rest on assumptions which are certainly arguable. It is, for example, sometimes argued that it is in some ways unfair that the railways should have to bear the whole cost of their track, whereas the road haulage vehicles only bear a proportion of the cost of the roads. It is doubtful how far this state of affairs exists because goods vehicles probably pay annually in taxation a sum in excess of the total expenditure on the roads, but would it be a self-evident proposition that a situation in which goods vehicles only bear a proportion of the costs of their track was unfair? Can it not be argued that the very fact that the road caters for the private motorist, as well as for the bus and road haulage vehicle, shows that it is a more complex instrument of transport than the railway, which does not provide these additional benefits.

Secondly, it seems to me to be impossible to ignore track costs entirely and to use operating costs as the sole criterion of the cheapness of a service. In any transport system, the problem of renewing or laying new track must be faced and this at once necessitates decisions about investment and maintenance. Even the most "omniscient dictator," in surveying this sort of problem, would immediately have to make up his mind on just those kinds of social and moral problems to which I referred before. In short, he would have on his plate just the very kind of problems which face this country at the present time. I sometimes wonder whether the pioneers of the motor industry, one of whom we are commemorating, realised what a gargantuan monster they were creating. What seems to me to be clear is that our success or failure in dealing with the problem of transport in its widest sense is going to have a fundamental effect on the type of civilisation which will exist in these islands in 20 to 30 years' time.

* Abstract of Henry Spurrier Memorial Lecture read before the Institute of Transport. The third portion appeared January 9.

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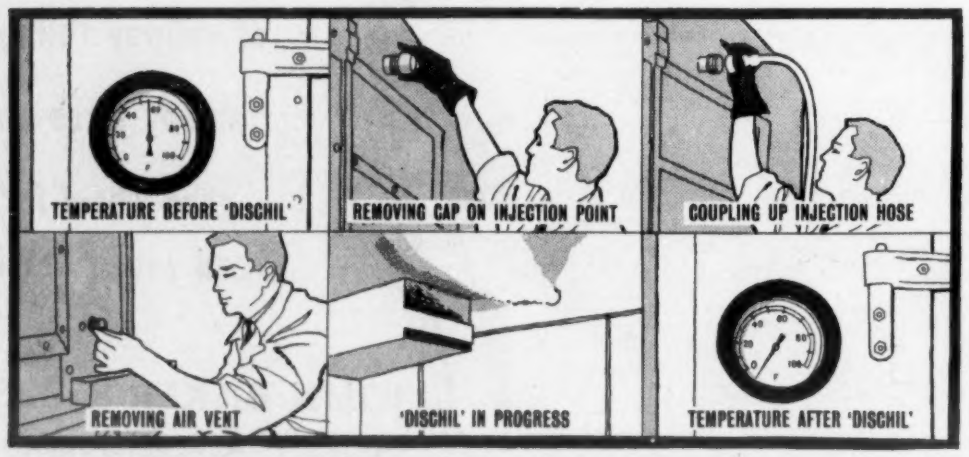
This service offers a means of rapidly reducing the temperature of insulated road or rail containers or of mechanically refrigerated vehicles. It can be used before or after loading and ensures that your goods travel in a bacteria-free atmosphere and arrive in optimum condition.



Liquid CO_2 is injected into the vehicle normally after it has been loaded. Very rapid heat extraction from the vehicle shell and contents takes place and the desired operating temperature is reached in a few minutes.

TA/3331

C.I.E. RATES INCREASE

Off-Peak 2d. Bus Fare in Dublin

AS recorded in our issue of January 16, Coras Iompair Eireann, the Irish Transport undertaking, has announced increases in fares and freight rates on its road and railway services. The majority will take effect from February 1, but revised fares on the city bus services in Cork, Dublin, Galway, Limerick and Waterford were introduced on January 18. Railway and provincial bus fares will be raised by 7½ per cent as a general rule and rail and road freight charges will be increased by 10 per cent. On the city bus services the minimum 3d. fare stage remains unchanged, some 4d. and 5d. fare stages have been shortened and fares of 6d. and upwards were increased by 1d. In the centre of Dublin a new 2d. off-peak fare has been introduced and is available on weekdays between 10 a.m. and noon and 2.30 and 4.30 p.m. Examples from Parnell Monument are to St. Stephen's Green, Westland Row, South Great George's Street and Grattan Bridge. The special Monday-to-Friday lunchtime fare for children, which applies from noon to 2 p.m. and was 1d. for up to 6d. adult stage, has been extended to cover the 7d. stage, while a new 2d. fare covers adult stages from 8d. to 1s.

Adjustments are being made to bring former Great Northern Railway Board road and rail fares into line with those of C.I.E., but a special scale will continue to apply to the Dublin—Dundalk bus route, subject to the general 7½ per cent rise. To encourage regular travel on provincial buses the basis of calculation for 12-journey ticket rates will be changed from 8 to 7½ times the single fare, so that there will be very little increase on existing rates. The general increase on existing rail fares will produce a second-class fare level of 2.8d. a mile single and 2.56d. a mile return. So far as freight rates are concerned, while the general increase is 10 per cent, the charges for smalls by road and rail will rise by 16⅔ per cent.

Wages awards will cost C.I.E. an additional £700,000 annually and it is estimated that the increases will bring in additional revenue of between £600,000 and £650,000. It is intended to seek further operating economies including, possibly, the closing of further unremunerative branch lines.

Construction of Britain's longest crude oil pipeline has been completed. Running for over 60 miles across South Wales, the pipeline links the British Petroleum Company's tanker terminal, now being built near Angle Bay, Milford Haven, with the company's Llandarcy Refinery, near Swansea. It can carry 5 million tons of crude oil a year.

BRUSSELS MOTOR SHOW

Many British Exhibits

F.N. BUS WITH TWO PERKINS ENGINES

AFTER an interval of four years, the 40th Brussels Salon de l'Automobile, which runs until next Wednesday, January 27, has again become the traditional opener to the annual series of European motor shows. Few novelties can be reported, but the very much enlarged exhibition, ranging from children's bicycles to 100-ton lorries, presents numerous facets revealing not only Belgian trends but those of the motor industry in general.

American makers have taken much space at the show, but actual import figures for U.S. commercial vehicles have dropped consistently over the last three years and, with 1,872 units, represented only 8.6 per cent of total Belgian imports in 1959. Common Market countries accounted for 15,425 vehicles imported into Belgium, with a German lead of 9,423 vehicles. After a sharp decline to 1,715 vehicles in 1958, British makers last year sent to, or assembled in, Belgium 3,686 vehicles. To encourage local assembly, customs duties on parts and components amount to only 10-12 per cent. In the case of engines these duties are as low as 6 per cent, while complete vehicles are charged 24 per cent. The increasing use by foreign manufacturers of local assembly plants and the subsequent production of vehicles with considerable Belgian content also puts the country into the re-export market with a total of 7,313 units last year.

European Exhibits

In addition to the vehicles from the U.S. there are exhibits from France, Germany, Holland, Italy, Sweden and the United Kingdom. British participation is particularly strong with 14 makes. The collapsible seats, can be rapidly converted into a van. A folding entrance door is provided at the side and full-width rear loading doors are fitted for use as a van. The joint exhibit of the various Ford factories from Europe and America occupies an entire hall and accommodates the complete commercial vehicle range from Dagenham. The Guy distributor for Belgium, Garage du Parc, unfortunately crowded so many vehicles on to the stand that several of the exhibits from the goods range became "Invisible" rather than Invincible. Also shown was the latest Guy air-sprung and disc-braked passenger chassis with a Leyland engine.

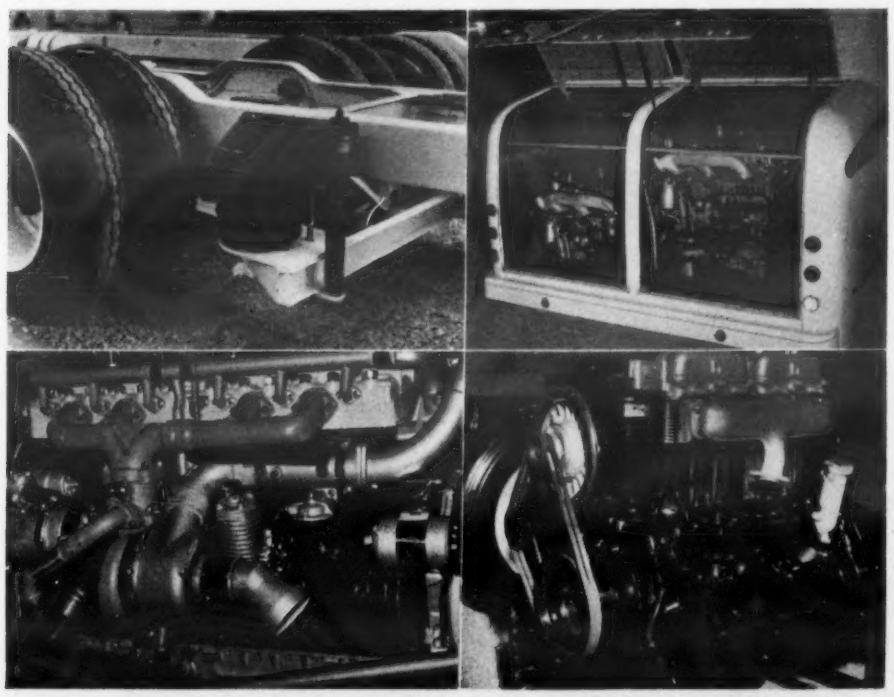
Leyland Meteoor

Leyland engines and running units have for many years been the standard equipment in Belgian-built Brossel vehicles and the latest examples from the Brossel goods and passenger range are shown alongside the products from Leyland. As already reported these include a new haulage chassis, the Meteoor, for a gross weight of 12 tons. The Meteoor, specially developed for operation in the Low Countries, is exhibited together with a Super Comet, with which it shares many mechanical features. It has, however, the easy-access cab ahead of the front axle which was first introduced on Albion vehicles. Among the other Leyland Group exhibits are a Scammell Scarab mechanical horse, a Super Beaver 12 ft. 6 in. wheelbase tractor, a Worldmaster passenger chassis and a new Albion Clydesdale passenger chassis with vertical O375 engine and air-pressure brakes.

A Jonckheere-bodied 49-seat bus on the World-master chassis is one of several at the Brussels show in the livery of the Belgian National Railways Bus Services and complying with that operator's layout requirements. Brossel exhibits include a new 19-ton gross goods chassis with forward-control cab and powered by the O680 engine. In 1954 Brossel introduced a rear vertical-engined passenger chassis with very low floor height and many of these are in service in Belgium and Luxembourg. Recently Brossel added another model to its range with the horizontal Leyland engine mounted behind the rear axle so that the only protrusion above the chassis frame is the radiator and fan assembly. Another Belgian manufacturer, albeit with an output of only 60 to 70 vehicles a year, is Automobiles Miesse, on whose stand several examples of passenger and goods vehicles are shown. A Gardner-engined passenger chassis, available in various overall lengths up to 39 ft., is shown with Dunlop Pneuride air suspension. A haulage tractor with Bollekens cab and Gardner 8LW engine is typical of the bonneted normal-control vehicles which make up a large part of the Belgian fleet of heavies.

(To be continued)

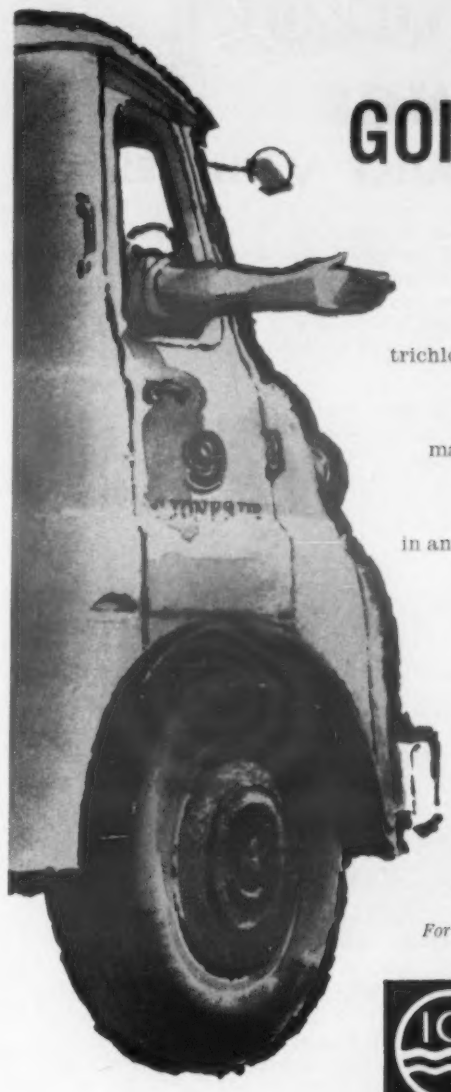
Brossel one-man bus incorporating Leyland horizontal diesel at rear and other Leyland running units; F.N. 70-passenger bus employing two vertical Perkins P6 diesels mounted transversely at the rear driving through Self-Changing Gears transmission; below, a Muylder mobile shop comprising the front end of a Bedford QL (four-wheel drive) chassis and new rear end on an undriven axle, giving a floor height of 9¼ in.; right, new Brossel 19-ton gross two-axle van (Leyland O680 engine) with Brossel passenger chassis in foreground



Dunlop Pneuride air suspension on Miesse bus; the twin-engine installation in the F.N. bus; below, Holset (Huddersfield) turbocharger fitted to Fiat 150-b.h.p. diesel; right, a four-cylinder O.M. (Saurer licence) air-cooled diesel now offered in production vehicles

newly formed A.E.C. Continental company exhibits a wide range of vehicles on its stand including two Mammoth Major six-wheelers, one of which is used as the basis for a 3,500-gal. R.A.Y. fuel tanker. There are three passenger chassis, one of which, a Regal IV, is equipped with a Desot 46-seat body. Among A.E.C. exhibits on bodybuilders' stands a notable example is the bulk grain carrier shown by L. A. Geussen. B.M.C. exhibits shown by the respective distributors for Austin and Morris-Commercial vehicles include the new Series IV goods range, whose unusual door layout attracted favourable comment. Bedford vehicles are shown in company with other G.M.C. products from Germany and the U.S.A. and range from the long-wheelbase 10-12 cwt. van to a petrol-engined 10-ton tractor for semi-trailer haulage. There is also a Super Victor estate car conversion with special equipment for the Brussels fire service.

The Commer and Karrier stand gives pride of place to the new 15-cwt. range and the multi-fuel engine exhibit. Interesting bodywork on a Karrier chassis appears on the A. Van Muylder stand in the form of a small 16-seat bus which, by means of



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The NEW Firestone SUPER MILEAGE LUG

THE DUAL-PURPOSE REAR-WHEEL TRACTION TYRE with all the features you're demanding

POWER BITE TRACTION

Be it on main roads, by-roads, or no roads the Super Mileage Lug tyre's cross grooves, heavy shoulder lugs and circumferential ribbing will combine to give maximum bite and traction and long safe wear. The dual-purpose Super Mileage Lug helps reduce mechanical maintenance too. Many so-called dual-purpose tyres slip and spin causing undue strain on engines and transmissions. But with the POWER BITE TRACTION of the Super Mileage Lug, this profit-draining problem is practically eliminated.

MORE SKID DEPTH

Deeper non-skid pattern than in ordinary highway tyres gives thousands of miles of sure-footed highway hauling.

SUPER STRENGTH BODY

Super Gum-Dipped, Tension-Dried cords make a really strong, durable body which gives big dividends in tyre mileage and vehicle efficiency.

OUTPULLS AND OUTLASTS any tyre of its kind. Specially designed for on-and-off-the-road service where a large part of the work is off-the-road and particularly severe.

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EXPERIENCE COUNTS 45 Factories throughout the world. Firestone total sales exceed £1,000,000 per day.

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RANGE

of QUALITY-BUILT VEHICLES

This 1,000 cu. ft. box van on a "Swiftsure" 13 ft. 6 in. chassis has been supplied to RACE Furniture, Clapham, London, S.W.4. The alloy body by Freight Engineering Co. has barrelled sides, having the same contour as the sides of the Thornycroft reinforced resin cab. The vehicle is used to carry furniture to schools, hotels and shipyards throughout the country.

Other "Swiftsure" wheelbases are the 17 ft. 6 in. long and an 11 ft. tipper for gross laden weights up to 9 tons 6 cwt. All are powered by the Thornycroft JR6 4.18 litre six cylinder engine providing quality-built 6/7 tonners with a high performance: a range of Works built bodies in wood or alloy is available for this chassis.

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NEWS FROM ALL QUARTERS

Diversion of Train

The Golden Arrow train service from London to Paris was to run via Dover instead of Folkestone from Monday to Friday this week, while engineers were making alterations to the railway lines at Folkestone Junction and to Folkestone Harbour station as part of the work of electrifying the remaining lines in Kent.

Reorganisation of Norwegian Railways

The Norwegian Storting (parliament) recently approved a 10-year railway rationalisation and modernisation plan at a cost of 2,200 million Norwegian crowns (about £110 million) after a two-day debate. The plan provides for the closing of uneconomical lines, improvement of roads, and increased co-operation with road services.

Kingston By-Pass Bailey Bridge Rejected

The Minister of Transport has decided not to proceed with the construction of an experimental over-bridge, using Bailey bridge material, at the "Toby Jug" intersection on the Kingston by-pass at Tolworth. The proposal is thought to be open to objections on grounds of amenity and that a temporary construction would not be justified in relation to its cost.

New Platform at Queen Street Low Level

A new No. 10 platform was brought into use at Queen Street Low Level Station in Glasgow, on Monday this week, marking a further stage in the modernisation of the station in preparation for the introduction this year of electric trains. This new platform, for westbound trains to Helensburgh, Balloch, Milngavie, Hyndland, etc., replaces the existing No. 10 platform and no change in travelling arrangements is involved.

Changes in Unloading Restrictions?

The experimental ban on loading and unloading goods at a number of difficult intersections and lengths of London streets particularly liable to congestion between 1 p.m. and 6.30 p.m. is being continued for the present under the modified "pink zone" plan. But consideration is being given to alternative possibilities which may be substituted in the spring, the Ministry of Transport states. Parking meters are due to be extended throughout Mayfair on April 4.

Crick—Doncaster Motorway Line

A draft scheme for the second part of the London—Yorkshire Motorway shows that the proposed route of this 36-mile extension of M1 would run northwards from Crick, near Rugby (present terminus of M1), to end in the West Riding at a junction with the Doncaster by-pass, which is due for completion in June, 1961. Through Leicestershire the route follows the compromise line proposed by Leicestershire County Council. The Minister of Transport intends to publish as soon as possible his proposals for an extension of the motorway in the West Riding towards Sheffield and Leeds, and for a spur from Catthorpe in Leicestershire to join ultimately with a Birmingham to Lancaster motorway.

Winchester—Newbury Line to Close

The branch line between Newbury and Winchester is to be closed to passengers from March 7, the Southern Region announces. The last train will run on March 5.

Ferry Service to be Continued

After consideration by the East Anglian area Transport Users Consultative Committee, the proposal by the B.T.C. to close its Harwich, Shotley and Felixstowe passenger ferry service has been rejected. It was originally intended to close the service on December 31.

Main Elephant and Castle Works

Following the completion of stage I (the southern portion of the area), work will commence shortly on the first contract in stage II, the principal feature of the Elephant and Castle improvement, which comprises the continuation of the widening of Newington Butts northwards, the construction of roundabout approach roads north-westwards to St. George's Road and north-eastwards towards New Kent Road as far as the junction with Walworth Road, the realignment of part of St. George's Road and the construction of three pedestrian subways. These works represent the south-west portion of the main roundabout comprising stage II of the Elephant and Castle improvement.

Elimination of Level Crossings in Chicago

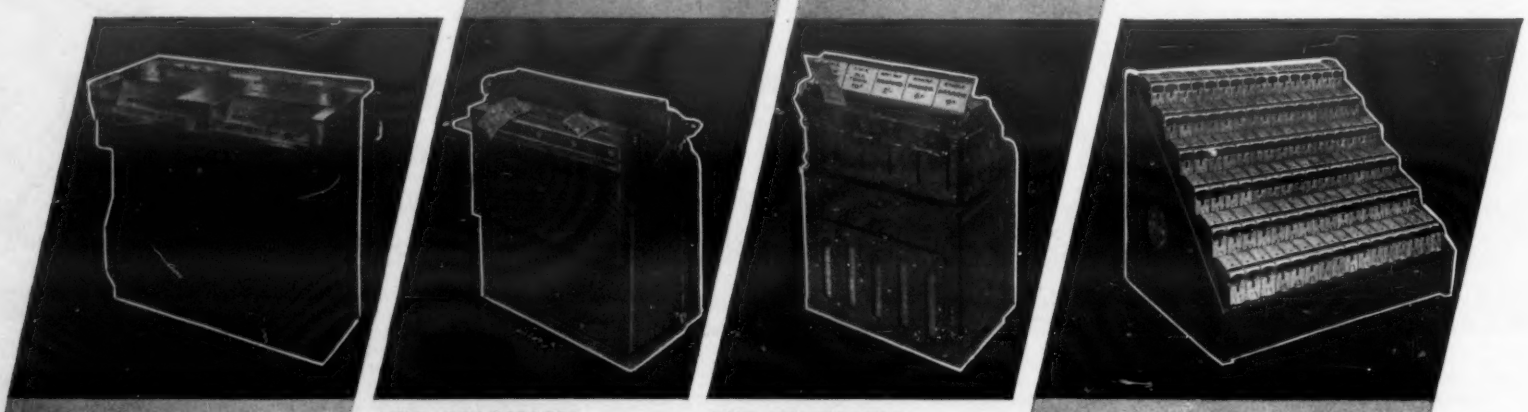
Work is to start immediately on a $4 million project to elevate the 2½-mile ground-level section of the Chicago Transit Authority's Lake route between Laramie Avenue, Chicago, and Harlem Avenue, Oak Park. Local and state authorities will contribute $3.4 million to the cost. By removing the tracks to the adjacent elevated right-of-way of the Chicago and North Western Railroad, a total of 22 level crossings will be eliminated and train service materially speeded up. On weekdays more than 500 trains operate through these level crossings, causing serious delays to both street traffic and pedestrians. Modern stations are to be built to take the place of the North Western stations at Central Avenue, Austin Boulevard, Ridgeland Avenue and Oak Park Avenue, all of which have recently been closed.

Railroads Bid for Barge Line

The Illinois Central and the Southern Pacific railroad companies recently applied to the U.S. Interstate Commerce Commission for authority to acquire the John I. Hay Company, a barge line. The barge operations involved extend over more than 2,500 miles, principally on the Mississippi and Illinois rivers and the Gulf Intercoastal Waterway, from Milwaukee and Chicago to New Orleans and to Houston and Brownsville, Texas. The territory coincides with areas served by the Illinois Central and the Southern Pacific rail systems. The company owns six radar-equipped diesel towboats and 90 steel barges. The purchase price is $9 million. The barge line would continue with its present operating management. The railroads say that the acquisition will enable each of them to offer users a co-ordinated transport system combining the best elements of water, highway and rail service.

FARE COLLECTION SYSTEMS Speed, ease, accuracy — these are the qualities everywhere associated with BELL PUNCH machines, four of which are shown here.

TOP SPEED TICKET ISSUE with BELL PUNCH



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Self printing for speed and accuracy, issuing 2 tickets per second.

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For one-man bus operation
Pre-printed coloured tickets from driver to passenger in a second — automatic overprint of stage, date, etc.

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COMMERCIAL AVIATION

Control of Ghana Airways

SKYWAYS CUTS FARES

IT has been announced that the Government of Ghana is discussing with British Overseas Airways Corporation the taking over of the B.O.A.C. 40 per cent shareholding in Ghana Airways. According to Mr. Edusei, Ghana Minister of Transport and Communications, this is the first stage in a reorganisation and expansion of the company. The Government would become the sole shareholder, but B.O.A.C.'s services would be retained on a management agreement basis. Plans were being studied to increase Ghana Airways' aircraft fleet "so as to expand international transcontinental routes and extend and increase the frequency of domestic services." Ghana Airways was formed in co-operation with B.O.A.C. in July, 1958, and replaced the Ghana section of the old West African Airways Corporation. B.O.A.C. operates twice-weekly 100 series Britannia services between London and Accra under charter to Ghana Airways. The aircraft carry the Ghana Airways fleetname, but are flown by B.O.A.C. crews. The corporation is also training Ghana aircrew and other staff. Local services in Ghana are maintained by Ghana Airways with DC3s and de Havilland Herons.

Last Comet 4 for B.O.A.C.

The nineteenth and last of the de Havilland Comet 4 jet air liners has been delivered to the British Overseas Airways Corporation. Comets will open a South American service on January 25 and one to the West Indies on January 30.

Cheap Fares Strike Snag

The Commonwealth Union of Trade has announced with regret it cannot at present operate the proposed series of charter flights to colonial destinations, owing to legal difficulties which have arisen. (MODERN TRANSPORT, January 2.) Consideration is being given to the problems involved.

Aden Airways Buys Argonauts

Aden Airways has bought three B.O.A.C. Argonauts, leaving only four remaining for sale. The first of the three will leave London at the end of this month, the second will be used for crew training in the United Kingdom and the third will be handed over in April.

U.A.L. Pacific Jet Service

The first Douglas DC8 jet service between California and Hawaii is to be inaugurated on March 14 by United Air Lines. Initially, United will provide 12 return flights weekly—six each from Los Angeles and San Francisco. The aircraft will carry 28 first-class passengers and 89 in the custom coach cabin.

P.A.A. Jets Daily to Tokyo

Pan American World Airways inaugurated a daily jet service between San Francisco and Tokyo on January 15. The new schedule provides non-stop flights on Mondays and Thursdays from Tokyo to San Francisco; these flights continue to Los Angeles. On other days, the flights from Tokyo call at Honolulu and continue to San Francisco.

Eagle to Fly Nassau—Miami

On January 14 President Eisenhower signed a foreign air carrier's permit allowing Eagle Airways (Bahamas), Limited, to operate scheduled passenger and freight services on the routes Nassau—Miami and Miami—Havana. In addition unlimited charter authority has been granted. The Nassau—Miami service will commence on March 1 at an initial frequency of four return flights daily and Viscount aircraft, based in Nassau, will be used.

First Mexicana Comet Delivered

The first of three de Havilland Comet 4Cs ordered by the Compania Mexicana de Aviacion was delivered at Mexico City Airport on January 14. The aircraft had just flown from Hatfield, England, via Gander and Chicago, a distance of some 5,800 miles, in a flying time of about 15 hr. The Mexicana Comets are destined for service on the C.M.A. Golden Aztec international services linking Mexico City with Chicago, Los Angeles and Havana. The second Comet 4C for Mexicana is due for delivery within the next four weeks.

Channel Air Bridge and B.R.

In an address this month to the Southend branch of the Royal Aeronautical Society, Mr. Douglas Whybrow, general manager, Channel Air Bridge, indicated that next year might see the first express night car ferry from Perth, Edinburgh and Newcastle to Southend. British Railways and the Channel Air Bridge were working on plans for car ferry trains to bring motorists from Scotland and Northern England to the airport, and the B.R. was launching a big publicity campaign for rail-air day trips to France. There was not the rolling stock available this year.

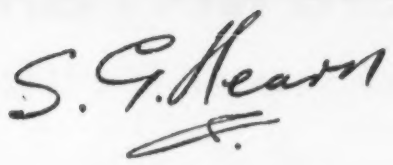
Viscounts for A.U.A.

It is reported from Vienna that representatives of Austrian Airlines (A.U.A.) and Vickers-Armstrongs (Aircraft), Limited, have signed heads of agreement providing for the Austrian company to fly Vickers Viscount Series 810 type 837 turbo-prop aircraft. It is expected that a formal contract, amounting to about £3,500,000, will be signed in the next few weeks. Four of the aircraft are to be delivered in March, and another two during the summer. They will replace the four Series 700 Viscounts, chartered from the Norwegian company, Fred Olsen Air Transport, which A.U.A. has used since its inception more than two years ago. The purchase would be financed in part through an Austrian-Government-backed credit operation and in part from the company's own capital.

Skyways Reduces Coach Air Fares

New coach air tourist fares between Lympne and Beauvais which have been announced by Skyways to take effect from April 1 show considerable reductions. There will be a night excursion return fare of £5 10s. valid for 90 days and a daylight excursion return fare valid for 30 days of £6 10s. These compare with the present 23-day excursion fare of £7 4s. midweek and £8 8s. at weekends. In both cases the inclusive coach return fares for the London—Lympne and Beauvais—Paris journeys are £1 15s. extra. The service will also be speeded up, to give a 5½ hr. overall journey time, from the centre of London to the centre of Paris. All other coach air fares on the route have been much reduced and the ordinary return between London and Paris is to be £10 15s. instead of £11 6s. The peak frequency will be increased from 12 to 18 flights a day.

EASTERN REGION RETIREMENT



Mr. S. G. HEARN, O.B.E., C.V.O., M.Inst.T.

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As already indicated in MODERN TRANSPORT Mr. Sydney George Hearn is retiring on March 31 from the post of assistant general manager, Eastern Region, British Railways, which he has held since January 1, 1958. He had, for the previous two years, been chief operating superintendent, Western Region, and had occupied the similar position on the London Midland Region from 1951. He has thus enjoyed a singularly wide experience of postwar railway operating problems. Sydney Hearn joined the Great Western Railway in the Plymouth division in 1911. After four years' military service in the 1914-18 war he was nominated in 1921 for special training, being the first traffic department candidate so selected, and gained further experience in the goods, traffic, motive power, signal and docks departments, following which he was engaged on special duties in the offices of the general manager and superintendent of the line. He was appointed junior assistant to the divisional superintendent, Newport, in 1930, chief clerk to the divisional superintendent, Worcester, in 1933 and assistant divisional superintendent, Newport, in 1936. Two years later he went to Gloucester as divisional superintendent thereafter becoming assistant to the superintendent of the line in 1940, operating assistant in 1941 and principal assistant in 1945. In 1946, he became assistant superintendent of the line, a post redesignated assistant operating superintendent, Western Region, in October, 1948. In May, 1951, he transferred to the London Midland Region as operating superintendent, an office later redesignated chief operating superintendent, and it was at the special request of the British Transport Commission that he returned to Paddington in 1956 to succeed Mr. Gilbert Matthews. Mr. Hearn has served on the council of the Institute of Transport, and is at present chairman of its Metropolitan Section, having previously been a member of the committee, 1953-56, and vice-chairman, 1956-58. He was selected by the Railway Executive to visit the U.S.A. in 1950 as operating member of a party studying railway working conditions under the auspices of O.E.E.C. (Organisation for European Economic Co-operation), and has also been a member of operating study groups which visited France. He was made an O.B.E. in the New Year Honours of 1948 and a C.V.O. in the Birthday Honours of 1958; in the Engineering and Railway Staff Corps, R.E. (T.A.), he holds the rank of lieutenant-colonel.

GOODS VEHICLE SECURITY

Spotlight on Theft Problem

AN IMMOBILISATION DEVICE

NUMEROUS vehicle security or immobilisation devices (usually they are in the former category) are currently available to combat the rising tide of thefts of, or from, unattended goods vehicles. Most of them must be regarded as short-time defences only because, as was noted in a recent issue, virtually nothing is proof against a determined and experienced thief or gang which has an unguarded vehicle to itself for a period of hours. In those circumstances, of course, the load can be unsheeted and removed or a van body broken into via the sides or roof.

However, short-time security devices have an essential value and it is no reflection on their effectiveness to inquire how many attempts they have foiled. No one knows—but there is accumulating evidence that thieves simply steer clear of vehicles with tell-tale locks or other devices. One London parcels carrier, for example, reports that his secured vehicles suffered only five thefts in a period of 18 months whereas sub-contractors, who carry only a small portion of the traffic, suffered 450 thefts in the same period.

Many Units Sold

One device which appears to satisfy many users, and to which reference has already been made in our columns, is the Car-Guard, manufactured by Security Products Manufacturing Co., Limited, of 44 Tottenham Court Road, London, W.1. It is claimed that some 2,000 equipments have been sold to commercial users, including some well-known fleet owners. The Car-Guard, which has the recommendation of insurance companies, gives a dual protection; it sounds an intermittent warning klaxon horn and cuts out the ignition circuit or, in the case of diesel engines, the starter circuit. Full wiring instructions are available.

There are two models available; a simple device which simply cuts out ignition (or diesel starter) and sounds the vehicle horn costs £8 17s. 6d., plus a fitting charge where desired of £1 2s. 6d., and the universal model, costing £29 10s., plus a fitting charge of six to eight guineas, which gives complete vehicle and load security in the case of box-vans. Special switches are fitted to cab doors (hinged or sliding) and body doors or shutters, also the bonnet of normal-control vehicles.

Simplicity of Operation

A particular attraction of this device is that when leaving his vehicle a driver need do no more than set the handbrake, switch off and remove the ignition key and close all doors. After an interval of about 10 sec. (to enable him to carry out these functions) the vehicle alarm system is set. If he fails to shut a door he is soon reminded by the alarm sounding. To re-enter the cab or body he has only to insert a special eight-ward key (each one is individual) into a security lock located in a convenient position. Operation of this lock neutralises the circuit. If, however, any attempt is made otherwise to enter the vehicle, raise the bonnet, short the ignition coil or battery, the klaxon will sound and while this is so the ignition is automatically cut out.

In the case of a diesel vehicle the alarm system is connected to the vehicle dynamo and if an attempt is made to tow the vehicle to start it the dynamo, once it commences to charge, will set off the klaxon. An adaptation of the device gives protection to semi-trailer bodies. The alarm is housed in an armoured compartment near the engine. It is connected to the starter terminal by armoured cable which prevents thieves cutting the alarm out by severing the connection. There is an over-riding switch, with a special key, which can be operated when the vehicle is in a workshop.

Views of Insurers

Insurance companies are solidly behind vehicle security devices, in fact practically all goods-in-transit insurers now insist on a security device being fitted before policies covering theft are renewed, where there has been a theft. Under those circumstances they are not prepared to make any rebate, but a rebate is usually given if the insured person voluntarily fits his vehicle, i.e. in the absence of a claim. Similarly with vehicle insurance, it is general practice to decline cover against theft in the case of vehicles habitually left overnight in streets unless the engine is immobilised. If the owner refuses to secure his vehicle in this way the insurance company will usually refuse to cover it for theft.

Three major observations have been put forward to R.H.A. members by the vehicles security committee of the association. They are: (*a*) The biggest risk is the unattended lorry in streets or unsupervised parking places—the R.H.A. wants the number of supervised parking places increased; (*b*) anti-theft devices should be fitted to vehicles temporarily left on the highway because they do delay thieves; (*c*) all staff should be carefully screened when applying for employment and unexplained breaks thereof should be viewed with suspicion.

FORTHCOMING EVENTS

Until Jan. 27.—Brussels Motor Show.

Jan. 25.—E.R.S. (Birmingham). Films. J. Adams, "Swiss and Continental Light and Electric Railways." Exchange and Engineering Centre, Birmingham. 7.15 p.m.

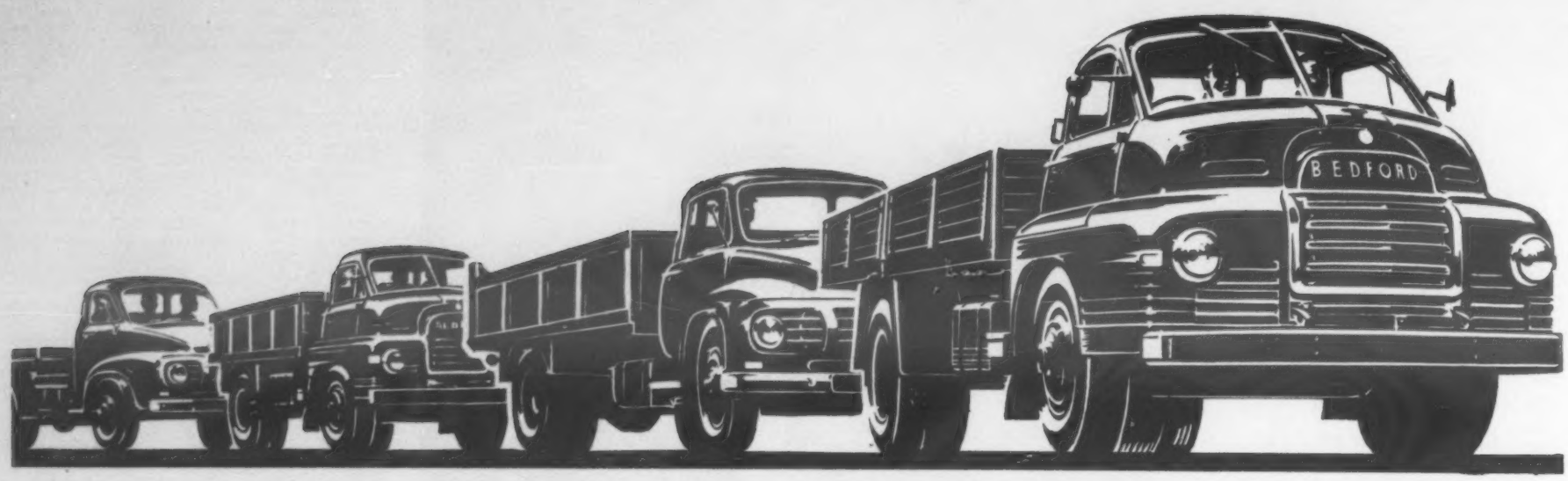
Jan. 26.—I.Mech.E. Discussion, "Problems of Maintaining Silence in Passenger Cars." 1 Birdcage Walk, S.W.1. 6 p.m.
Inst.T. (Leeds G. and S.). J. Evans, "Traffic Court Procedure." Leeds City Transport Dept., 1 Swinegate, Leeds, 1. 7 p.m.
Inst.T. (West Middx). C. E. Whitworth, "Impact of Road and Air Transport on Railway Economics." Control Tower Building, London Airport Central. 6 p.m.
I.C.E. E. O. Measor, L. B. Haley and A. J. Harris, "The Planning and Design of Maintenance Bases for Civil Aircraft." Great George Street, S.W.1. 5.30 p.m.
O.S. Presidential address by Sir William Black, and annual meeting. Victoria Coach Station, S.W.1. 6.45 p.m.
I.R.S.E. S. D. Concha, "Lifting Barriers at Level Crossings in Accordance with the Requirements of Ministry of Transport." Derby Railway Institute, Derby. 6 p.m.
P.R.D.G. C. H. Scutt, "Motive Power Modernisation." Technical College, Peterborough. 6.45 p.m.

Jan. 27.—S.R.L.D.S. R. L. P. Cobb, "Material for the Job." Chapter House, St. Thomas' Street, S.E.1. 6 p.m.
I.Mech.E. Dr. J. J. McMullen, "Technical and Economic Aspects Covering the Ocean Transport of Liquid Methane." 1 Birdcage Walk, S.W.1. 6 p.m.
Inst.T. (N.W.). Annual dinner and visit of president. Grand Hotel, Manchester.
B.I.R.E. (S.W.). R. O. R. Chisholm, "An Equipment for Automatically Processing Time Multiplexed Telemetry Data." School of Management Studies, Unity Street, Bristol, 1. 7 p.m.

Jan. 29.—R.Ae.S. (Man-Powered Aircraft Group). B. S. Shenstone, "Engineering Aspects in Man-Powered Flight." Library, 4 Hamilton Place. 7 p.m.

Jan. 30.—L.R.T.L. A. A. Jackson, "Into Deepest France." 153 Drummond Street, N.W.1. 6.30 p.m.
E.R.S. (Southampton). B. J. Prigmore, "Swiss Rail Review." Southampton University. 6.30 p.m.

Bedford No. 1 British truck the world over



Bedford No. 1 British truck the world over
50,000 Bedford trucks built in 1959

Bedford No. 1 British truck the world over
Highest-ever sales in 1959

Bedford No. 1 British truck the world over
4 in 10 new British trucks are Bedfords

A great year, 1959, for the British Motor Industry. And right out in front, leading the leaders, is Bedford . . . more firmly established than ever before as No. 1 British truck the world over.

Bedford's success is based on leadership in design, leadership in value-for-money, and leadership in service-after-sales. No wonder 400,000 Bedford trucks were sold in the nineteen-fifties alone!

The Bedford truck range is carefully graded to cover every load from 25 cwt. to 12 tons, with diesel or petrol power. See your local Bedford dealer. He'll be glad to recommend the Bedford best suited to *your* job.

50,000 Bedford trucks built in 1959. A truck production record never achieved before by any British manufacturer.

***Highest-ever truck sales in 1959.** Latest figures for 1959 show that, while British truck production increased overall by 31%, *Bedford* production increased by 63%!

***4 in 10 new British trucks are Bedfords.** Latest figures for 1959 show that 39.9% of all new trucks built in Britain were Bedfords.

30,000 Bedford DIESEL trucks built in 1959. Diesel-engined models accounted for 60% of Bedford's 1959 production record.

On all counts Bedford sweeps the board . . . 43% of all buses and coaches registered in the 27/48 str. class were Bedfords. And Britain's best-selling light van comes from the Bedford stable too. Bedford van sales rose by 55% in 1959.

****Based on latest available Board of Trade statistics for first nine months of 1959, compared with Bedford production for the same period.*

Better buy Bedford

Vauxhall Motors Ltd, Luton, Bedfordshire

PICCADILLY LINE

ON the Piccadilly Line of London Transport railways two of the new seven-car trains are now in service, with room for 15 per cent more passengers than the stock to be superseded, as well as a new standard of comfort, fluorescent lighting and rubber suspension. These are the first of 76 production trains to be supplied by Metropolitan-Cammell Carriage and Wagon Co., Limited, of Saltley, Birmingham, against a £10 million order placed by London Transport in 1958—the largest single order for Underground rolling stock placed by London Transport since the war. Three prototype trains are already on the line. Further trains will now be brought into service at the rate of approximately one a fortnight until mid-1962. All existing Piccadilly Line trains will be replaced during that period except for 15 trains of the 1938 stock and the three prototype trains of 1956 stock.

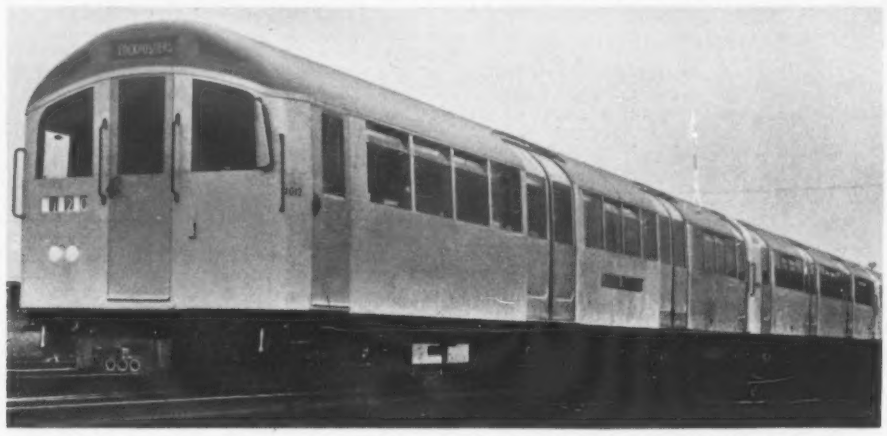
First of 76 new trains built by Metropolitan-Cammell

The sides of the cars are panelled in unpainted aluminium alloy sheeting, giving a "silver" appearance, and the trains have a roller-blind destination indicator above the centre cab doorway at the front. Like the rest of the train, the indicator and the train number plate cabinet are fitted with fluorescent lighting. Most of the control equipment is placed under the floor of the cars, increasing the passenger-carrying capacity by about 15 per cent.

Panelling of the cars in unpainted aluminium alloy gives a reduction in weight and consequently in energy consumption and also makes possible a saving in paint of some 3 cwt. per car with a corresponding saving on subsequent overhauls. Moreover, cleaning costs are lower.

Although London Transport has achieved substantial weight savings with postwar shallow line stock, the potentialities with tube stock are less. Space limitations on tube stock necessitate a complex design of underframe which would be difficult to make economically in light alloy. The body framing is already an essentially light weight steel structure giving little opportunity for further reduction in weight.

Each unit has a driving motor car at each end and can thus operate as a three-car or four-car train during the off-peak periods. The four-car unit consists of a driving motor car, a trailer, a non-driving motor car (i.e. a car with motored axles but no driving position) and a second driving motor car. A three-car unit has two driving motor cars with a trailer car coupled between them. Fully automatic coupling is provided at both ends of each unit with the Wedglock automatic coupler, which also completes pneumatic and electrical control connections.

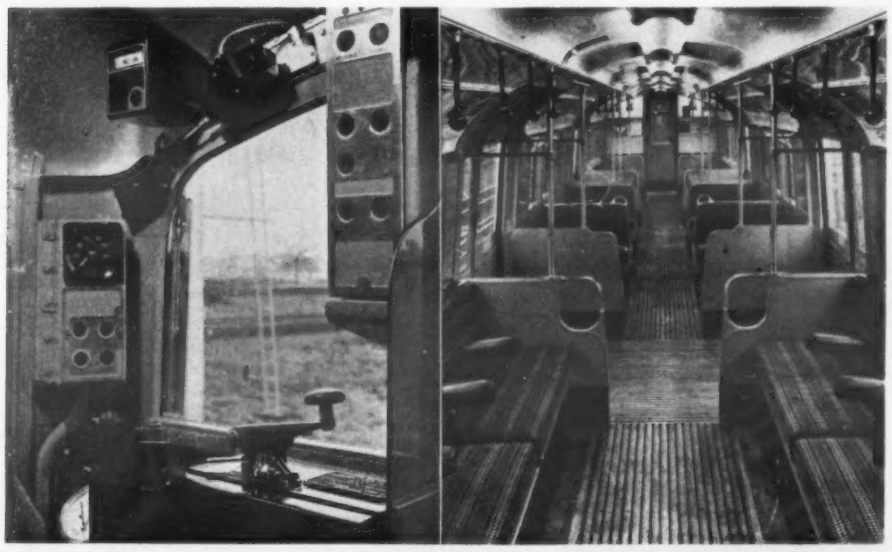


General view of Metropolitan-Cammell 1959 tube stock for London Transport Piccadilly Line

Bogie Suspension

The four-wheel bogie suspension uses rubber in compression and shear instead of conventional steel springs. Prototypes of this design, which entered service in 1954, have completed about 200,000 miles. These prototypes were based on experience gained with earlier prototype bogies built and put into service in 1947. The bogie bolster, normally mounted on coil springs, is supported at each end by two cylindrical rubber packs in the form of an inverted V and inclined laterally to cater for all forces acting on the bolster. Hydraulic shock absorbers are used to damp out vertical and lateral oscillations.

The axle suspension has been redesigned, each axlebox being located between bonded rubber chevron units housed in a cast-steel yoke within which they are free to deflect under the control of the rubber units. The yoke casting, which is bolted to the bogie side frame, has a screw adjustment on one side to compensate for wheel wear. The use of rubber suspension serves to reduce maintenance costs by eliminating all wearing parts such as rubbing plates, hanger pins and bushes, as well as steel springs. There is also an appreciable reduction in running-noise level, particularly in tunnel. The life of the rubber units has yet to be determined by experience; 10 years seems reasonable.



Driving cab of 1959 Piccadilly Line tube stock and, right, interior of car looking towards the guard's control panels

Central Line Benefits

The arrival of the new trains, which are being built to the design of Mr. A. W. Manser, chief mechanical engineer (railways), London Transport, will allow some of the present Piccadilly Line stock to be transferred to the Central Line, enabling the length of all remaining seven-car Central Line trains to be increased to eight cars by the addition of a fourth motor car. In this way, the new rolling stock allocated to the Piccadilly Line enables relief to be given to both lines at the same time, as the Piccadilly Line will benefit from the increased capacity of the new trains and the Central Line from the increase in the number of eight-car trains. If new stock had been allocated to the Central Line first, nothing could have been done for the Piccadilly Line, as its below-ground stations cannot take trains of more than seven-car length.

Fabricated Steel Frames

The bogie frames are of conventional fabricated steel plate construction, headstocks and transom being attached to the side frames by knees and rivets. The bogie is asymmetric, as is the current practice on single motor bogies with London Transport rolling stock, to obtain improved adhesion on the motored wheels. There are two axle-hung nose-suspended traction motors per motor car. The motors are mounted on roller suspension bearings on the inner axle of each bogie and drive through 7½ deg. helical gearing.

Braking is by non-metallic brake blocks throughout, two to each wheel. Each block is mounted on a combined brake head and hanger, and has its own enclosed individual brake cylinder with built-in automatic slack adjuster of improved design. Foundation brake rigging is completely eliminated. The brake blocks used are of a new design with increased thickness to reduce maintenance costs and are being introduced wherever possible on London Transport rolling stock. Formerly, a non-metallic insert was used inside a flanged cast-iron shell, the flange giving the necessary side guiding.

(To be continued)

PRINCIPAL CONTRACTORS

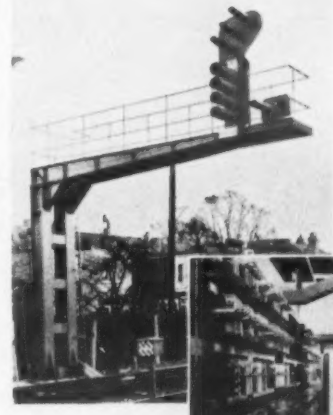
Car bodies and bogies ..	Metropolitan-Cammell Carriage and Wagon Co., Limited
Traction control equipment and auxiliary equipment ..	Associated Electrical Industries, Limited
Traction motors	General Electric Co., Limited
Brake equipment	Westinghouse Brake and Signal Co., Limited
Motor generators	Associated Electrical Industries, Limited
Door equipment	G. D. Peters and Co., Limited
Automatic couplers and disconnecting units	Associated Equipment Co., Limited
Roller bearing axleboxes and suspension bearings ..	Hoffmann Manufacturing Co., Limited
Isoudaphones	Clifford and Snell, Limited
Batteries	Peto and Radford, Limited
Auxiliary electrical equipment	Patent Lighting Co., Limited
Speedometers	J. Stone and Co. (Deptford), Limited
Lighting and auxiliary equipment	Benjamin Electric, Limited

Southern Region modernisation

assisted by

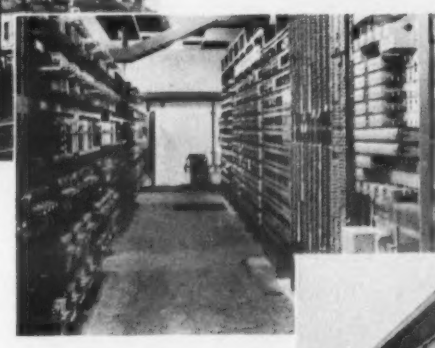
WESTINGHOUSE

SIGNALLING at BARNES
(Point Pleasant Junc. to North Sheen)



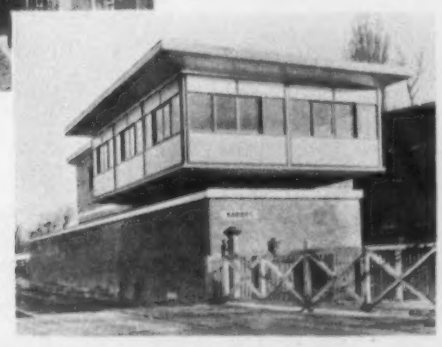
4-aspect signal and junction indicator, and subsidiary signal

This resignalling covered the supply and installation, over the whole section, of colour light signalling, point machines, and continuous track circuiting and, in the new signal box at Barnes, an O.C.S. control panel, with illuminated diagram, controlling all the signals and point machines for the 45 routes. In addition there is the operation of the existing level crossing gates by an oil gate machine controlled from a small push-button panel.



Part of relay room at Barnes

Photos by courtesy of British Railways—Southern Region



Barnes new signal box and level crossing gates

Westinghouse Brake and Signal Co. Ltd., 82 York Way, London, N.1

Saxby & Farmer (India) Private Ltd., Calcutta — McKenzie & Holland (Australia) Pty. Ltd., Melbourne
Westinghouse Brake and Signal Co. S.A. (Pty.), Ltd., Johannesburg. — Agents:—Bellamy & Lambie, Johannesburg

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THE PROBLEM OF THE PEAK

*Rail and Road Aspects (Cont.)**

IF the duration of the two peaks is taken at present as four hours, and this is shortened by 20 min., a simple calculation shows that there will be a considerably increased number of vehicles required to provide the same service to the public as at the present time, with no increase in revenue. The effect of the rapid development in the use of private transport on peak-hour traffic is difficult to assess, as it obviously affects both peak and off-peak traffic, but the net result seems most likely to increase the problem.

Vehicles

The bus fleet must be large enough to carry the peak load, with the result that a large proportion is in use for not more than four to five hours per day, and there are some vehicles which are only in use for one useful journey in the morning and evening. Against this, the vehicles on the all-day service are very effectively used, with the result that even in an undertaking with a high peak load, the average week's work per vehicle is about 50 to 60 hours, which compares with the use made of plant in factories working a day shift only. Nevertheless, overall costs of maintenance or servicing are increased as operations such as cleaning cannot be related to mileage run.

Staff are affected vitally by the peak; the attractive freedom inherent in their jobs is more than counter-balanced by the very awkward shifts which have to be worked. In addition to frequent week-end work, a large proportion of the mid-week work entails spreadovers of 11 to 12 hours. There is little wonder that the work is not attractive and that the job of fixing recompense sufficient to retain a good staff in these days, when leisure and its enjoyment have become so important in the scheme of things, is a problem which the wage-fixing councils have not yet solved. The other important aspect is that when the peak is high, it becomes impossible to schedule a full day's work for the crew, even when they are working the awkward hours and the spreadovers referred to.

Cost

This increases considerably when the greater part of the fleet is not in use for the large portions of the day, and when staff have to be paid when work is not available, and then paid penalties for awkward hours, and for considerable amounts of overtime. Peak-hour loading is usually uni-directional so that nearly half the mileage is run with empty vehicles, and one of the disappointments of the industry is that modern town planning seems to have made the problem worse than ever, and town planners in too many cases, in their relative placing of housing and industry, have little regard to the economic transport requirements of the majority of the occupants of the new houses who still depend on public transport to a large extent. Comparative costs of peak-hour vehicle mileage with that of all-day vehicle mileage, when calculated using fixed charges per bus, time charges per hour, and mileage charges per hour, are:

Peak Hour .. 40—45d. per vehicle-mile.
All Day .. .. 25—28d. per vehicle-mile.

In these figures the fixed charges and time charges are the average over the undertaking, but for mileage operated by vehicles in use for only one or two useful journeys per day, the real cost is very much higher and could reach figures of 70—80d. per vehicle-mile.

Apart from the increased costs to the operator, which are passed directly to the passenger, there are very considerable indirect costs to the community due to street widenings, improvements, one-way operation and other traffic aids, and these, in urban areas, can be most expensive operations.

Coping with the Problem

There is no doubt that in order to cope with heavy peaks economically it is necessary to have the vehicle with the highest capacity which can be used effectively. Recent regulations allowing for the extension of the 30-ft. vehicle to two-axle machines have been of major assistance, although the delay in making this concession has been quite inexplicable to operators, bearing in mind that the 30-ft. vehicle on three axles has been in operation for so many years. The latter type is used chiefly for trolleybuses, and the 72-seat 30-ft. trolleybus, with eight standing passengers, has done remarkably good work in coping with peak loads in many industrial centres. It is on heavily loaded services, in the main, that trolleybuses have been used, usually in replacement of the tramcars which previously ran. There is little doubt that a most effective contribution towards dealing with this traffic could be made with the same length of motorbus, which, with a front entrance, can take up to 78 seats, and by relieving the conductor of most of his platform duties, materially ease the job of fare collection.

To those undertakings which have a high peak load, and to the public they serve, one of the most effective single steps taken was the increase in the number of standing passengers which, after special arrangements during the war, was fixed at eight in 1948, as compared with the prewar figure of five. The unions and their members are to be congratulated on the effective and co-operative way in which, in general, they have put this into practice.

Work for the Conductor

The incidence of work for the conductor obviously varies tremendously from route to route, according to the type of traffic, and may be reaching, or have reached the limit, on the high-capacity vehicles now coming into service, if they are operated on services with a high interchange of passengers. On the other hand, there is little doubt that on the radial type of service even more standing passengers could be handled during the short-peak period, which would be more in line with the earlier practice on tramcars. Before reaching any final conclusion, however, it is a question on which careful work study is required, together with the necessary service trials.

Having provided the largest capacity vehicle which can be reasonably operated, these are used in a variety of ways. Services are increased by either increased frequencies or by duplication. Selected vehicles and services are turned short and this practice, in conjunction with minimum fares on the longer-distance services operating on the same main road, helps to segregate the long- and short-distance passengers, and therefore to obtain the best possible load factor. Limited-stop services, and in some cases almost nonstop services, to housing estates, also give high load factors, and with nonstop light journeys enable extra journeys to be obtained from the same vehicles resulting in a most valuable saving of vehicles and staff.

It could be that trailer-buses, as used on the Continent, if permissible, could be useful in assisting in this problem, although it is doubtful if, in these days of heavy traffic congestion, our road system is suitable. Certainly there were instances where trams and trailers were most effective, provided there was sufficient power in the driving unit, and this practice is very common on the Continent today. Many factories and schools have been most co-operative in making some adjustment of hours, but there is still scope for more of this type of staggering.

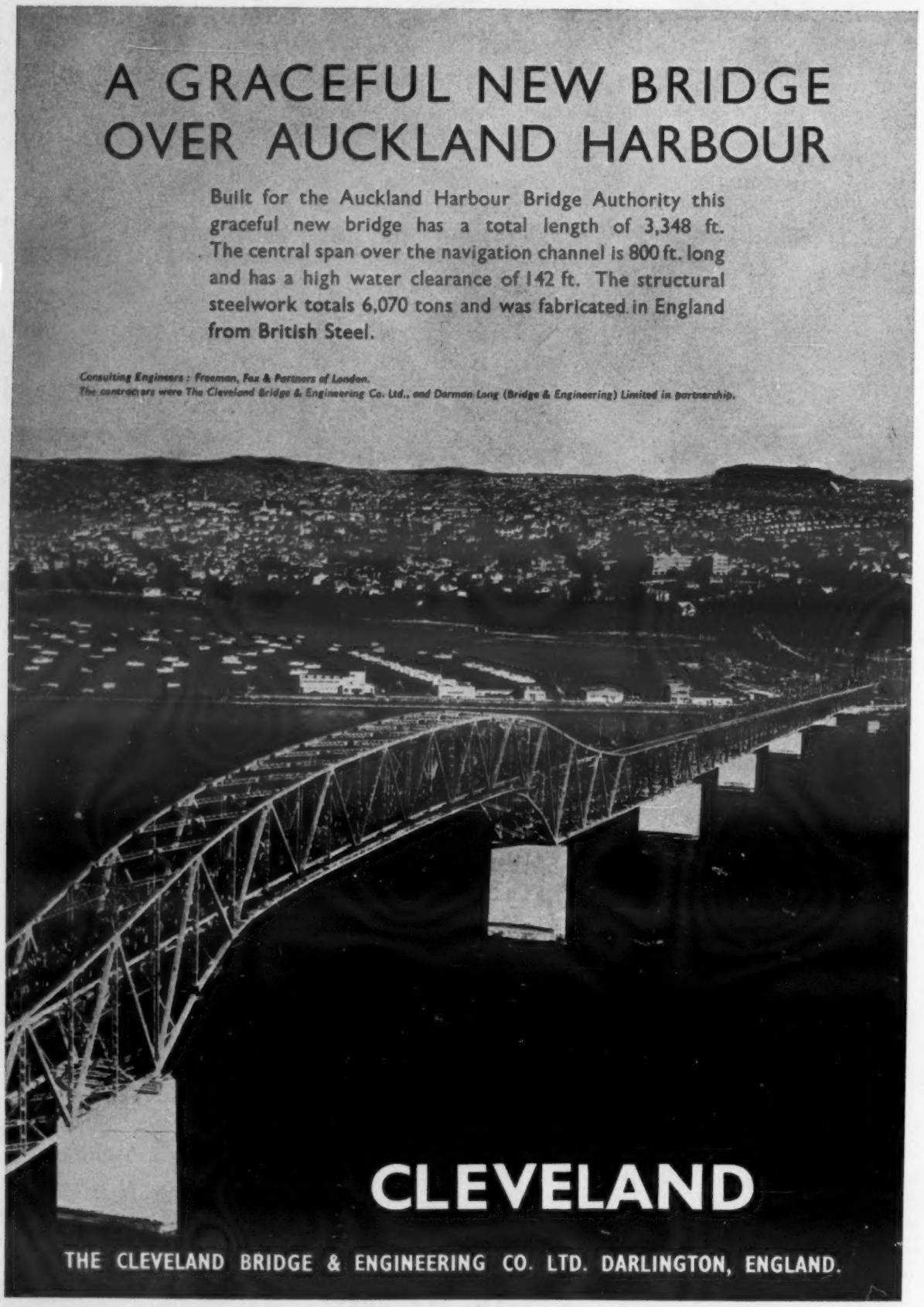
Lower Fares No Answer

The common suggestion is that lower fares in the off-peak hours would attract passengers from the peak hours. Fares are, however, so low that even a large reduction would be quite insufficient to persuade passengers to make so substantial a change in their times of travelling. Time and convenience are rated as much more valuable than a small saving in bus fares, and in any event, it is not possible for those going to and from work to make any radical change in their travelling times.

On the other hand the basic idea of a differential between the fares in peak and non-peak hours is fully justified if costs are the main consideration, and could be achieved by an increase in fares during the peak hours. Such action would be most unpopular and probably, at the moment, impossible to achieve, as even now the old practice of having cheap fares at peak hours has not been entirely eliminated, though this shows that such a step is practical, even if not yet advisable.

A possible development which would improve the position and which occurs mainly in heavy industries, is two or three shift working, but this depends on the need of individual industries to increase the use of their own plant. There is little incentive for this type of development in industry, where plant costs are relatively light, nor in commercial undertakings, and it is significant that the latter load in many cases exceeds the industrial load.

* A continuation of an abstract of the paper "Road Services" presented to the Institute of Transport on January 11 by Mr. A. F. Neal, general manager, Manchester Corporation Transport. The previous part and the abstract of Mr. P. A. White's paper "Railways" appeared January 16.


A GRACEFUL NEW BRIDGE
OVER AUCKLAND HARBOUR
Built for the Auckland Harbour Bridge Authority this graceful new bridge has a total length of 3,348 ft. The central span over the navigation channel is 800 ft. long and has a high water clearance of 142 ft. The structural steelwork totals 6,070 tons and was fabricated in England from British Steel.
Consulting Engineers: Freeman, Fox & Partners of London.
The contractors were The Cleveland Bridge & Engineering Co. Ltd., and Dorman Long (Bridge & Engineering) Limited in partnership.
CLEVELAND
THE CLEVELAND BRIDGE & ENGINEERING CO. LTD. DARLINGTON, ENGLAND.

LAST L.N.W.R. RAMSBOTTOM SADDLE TANK

Scrapped at Crewe

THE last of the former London and North Western Railway's Ramsbottom 0-6-0 saddle-tank locomotives, No. CD7, is being broken up at Crewe Works. The class was introduced by John Ramsbottom, then locomotive superintendent of the L.N.W.R., in April, 1870, for use mainly in the South Wales district. Although 260 locomotives were built, the last in October, 1880, only 20 were turned out in his time, the remainder being

The last of the Ramsbottom saddle tanks awaiting scrapping

built under the authority of Francis W. Webb, the first chief mechanical engineer of the L.N.W.R., when a large number was fitted with cabs for station shunting duties.

In February, 1913, the first locomotive of the class to be withdrawn was No. 3546, which originally held No. 1269 when built in November, 1872, and was renumbered on two occasions—1993 in September, 1892, and 3456 in January, 1903. The last survivor (CD7), which was built in September, 1878, at Crewe, was originally No. 2329 and after several renumberings became CD7 in December, 1911, upon transfer to the Carriage and Wagon Department at Wolverton. Under the L.M.S. regime the engines were put in Class 2.

They have 17 in. by 24 in. cylinders, 4 ft. 5½ in. coupled wheels and work at 140 lb. sq. in. pressure. There is 981 sq. ft. of tube heating surface and 87.3 sq. ft. in the firebox; the grate area is 15 sq. ft. The tank capacity is 600 gal. and 25 cwt. of coal can be carried. The fixed wheelbase is 15 ft. 6 in. and the length over buffers 28 ft. 3¾ in. The weight in working order was 34 tons 10 cwt. At 85 per cent of boiler pressure these little engines could exert a tractive effort of 16,530 lb.

OFFICIAL NOTICE

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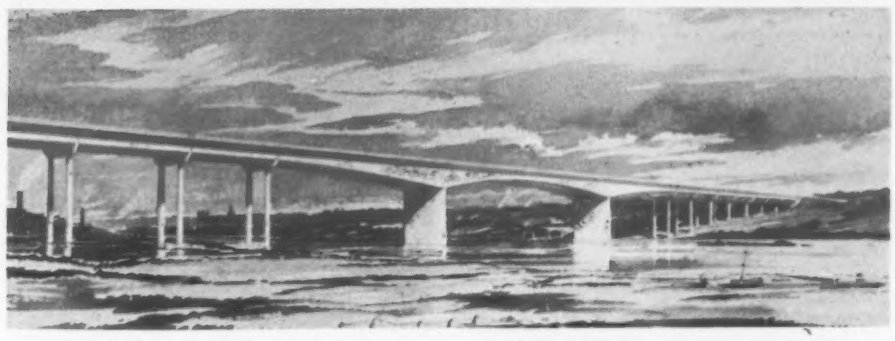
Bridges on Highways

★

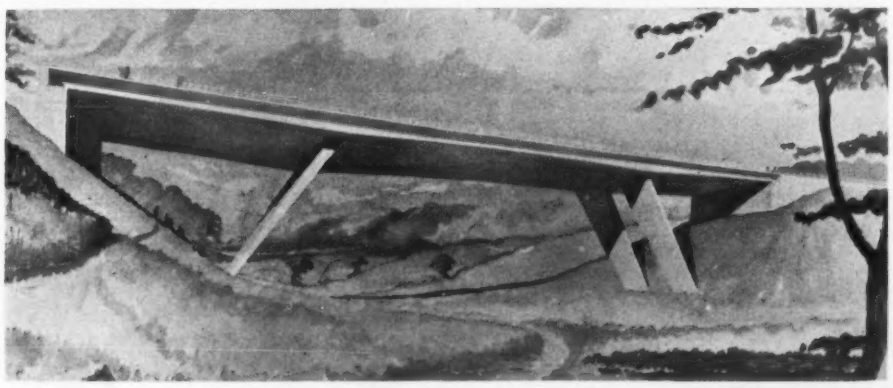
The increased rate of road construction in Great Britain has produced a number of striking new bridge designs in the modern idiom which reflect the best traditions of British civil engineering, of which we show six.

Lune Bridge on the Lancaster by-pass, designed by Lancashire County Council in reinforced concrete with single 230-ft. span; the spandril arch has a rise of 44 ft.

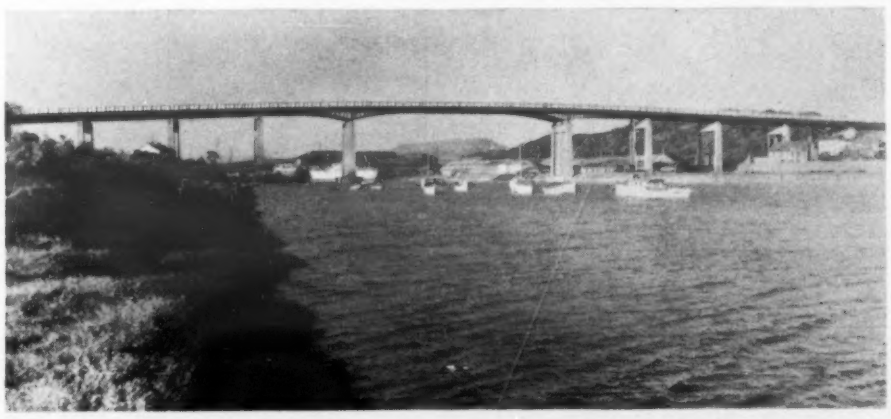


Proposed Medway crossing, 100 ft. above river, on Medway towns motorway, designed by Freeman, Fox and Partners; 112 ft. between parapets, with 500-ft. main span, and two side spans of 312 ft. each, to be in either steel or prestressed concrete. The approach spans, in prestressed concrete, will be from 100 to 135 ft. in length

Continuous prestressed concrete bridge proposed across Usk on Hirwaun—Abergavenny trunk road, A465, designed by Rendel, Palmer and Tritton (Alwyn Lloyd and Partners, consulting architects), with 120-ft. main span, 46 ft. between parapets and 33-ft. carriageway



Viaduct now under construction at Wentbridge on A1, designed by West Riding County Council to carry two 24-ft. carriageways on a 470-ft. long prestressed concrete structure



The Neath by-pass bridge, completed in 1955 by Cleveland Bridge and Engineering, runs at 90 ft. over the river on steel-plate girders, cantilever construction, with concrete piers; main span is 300 ft., width 94 ft.; two 22-ft. carriageways, cycle tracks and footways are included. Designed by Rendel, Palmer and Tritton, with Sir Percy Thomas as consulting architect

Another of the bridges on A465—a 225-ft. span reinforced-concrete open spandril arch 43 ft. wide with a 33-ft. carriageway, to be commenced in the future at Taf-Fechan; consulting engineers Rendel, Palmer and Tritton, and consulting architects Alwyn Lloyd and Partners

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Anyway, at this new price you must at least have a look at the Chieftain. We'll gladly arrange a demonstration at any time. And by the way, the design of that new 94 h.p. engine is going to astonish and please—a lot of people. You included, we hope.

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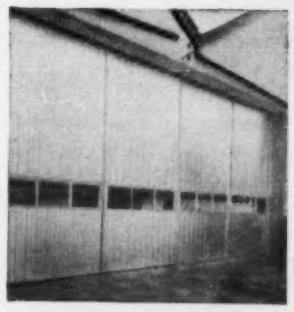

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RATES.—The minimum charge for classified advertisements is 7s. for 14 words or less, and 6d. for each additional word. The name and address of the advertiser is charged at the same rate. If a box number is used 2s. extra is charged to cover our name and address and postage. If set in paragraph form each paragraph is estimated separately. Official Notices and semi-display in the classified columns are charged at the rate of 40s. per single column inch.

ACCEPTANCE.—Advertisements can be accepted up to 2.30 p.m. on Monday to ensure insertion in the current week's issue. MODERN TRANSPORT is on Sale every Friday.

SITUATION VACANT

TRANSPORT CLERK required by British Oxygen Gases, Limited. Man 20-25 for transport office controlling 100 vehicles. Experience must include some supervision of staff and knowledge of transport forms, etc. Pension Scheme, Canteen, Social Club. Write, giving full particulars, to Personnel Officer, British Oxygen Gases, Limited, East Lane, North Wembley, Middlesex.

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Chief Commercial Manager, Scottish Region, 87 Union Street, Glasgow C1 (Douglas 2900)
Commercial Officer, Southern Region, Waterloo Station, London SE1 (Waterloo 5151)
Commercial Officer, Western Region, Paddington Station, London W2 (Paddington 7000)

CONCRETE SLEEPERS

Electrical Properties

USE of the rails as a positive detector of a train or vehicle standing on them dates from nearly 90 years ago. Since the war there has been very rapid acceleration in the installation of this equipment on main-line railways. One of the essentials of the track circuit is permanent way with wooden sleepers. Until recent years there have been ample supplies of good-quality timber sleepers, both at home and abroad, and these have been available at reasonable prices. They gave satisfactory service to both the civil and the signal engineer. They imparted flexibility to the track, were light to handle and allowed rails to be easily changed; for track circuiting purposes they possessed a reasonable electrical resistance.

After the outbreak of the 1939-45 war, timber supplies practically ceased and like most countries affected by hostilities means had to be found to provide a substitute from internal resources. The end of the war brought no relief so far as timber was concerned for prices had increased enormously and the quality of timber obtainable was poor. Concrete sleepers were initially developed as a substitute for timber, but later they were found to have technical merits, particularly with the use of long-welded rails.

Rail-to-Rail Resistance

This subject was dealt with in a paper, "The electrical properties of concrete sleepers," by Mr. B. E. Morgan, of the British Railways Research Department, recently before the Institution of Railway Signal Engineers. He stated that if a sleeper and its associated rail fastenings are to satisfy both the civil and the signal engineer it must have a number of properties including strength, use of fastenings that will not work loose but which will permit rails to be easily changed, sufficient rail-to-rail resistance for track circuiting and reasonable cost.

Concrete sleepers are rigid, so it is necessary to place a resilient pad between rail and sleeper to absorb impact loads under traffic and prevent local high stresses. The best material that has been found is rubber and this provides the electrical insulation required between rail and sleeper. An alternative electrical path exists through the fastenings which are in contact with the rail foot. The B.R. Signal Engineering Committee specified a minimum rail-to-rail resistance of 2 ohms per thousand yards of track. The electrical engineer, however, was anxious, with the new 25,000-volt overhead electrified lines, that the resistance of any rail to earth should not be too high and it was agreed that the rail earth resistance should never exceed 100 ohms per thousand yards and should generally be lower. These two requirements set an upper and a lower limit to rail-to-rail resistance to be achieved by concrete sleepers.

Research

Owing to wide variations in the rail-to-rail resistance of the track, whether composed of concrete or timber sleepers, due to climatic effects, it was realised that spot measurements taken periodically could not be relied upon to give true records of the variations and could even be misleading. It was therefore decided to make a continuous record over a period of at least 12 months and to make simultaneous observations on adjacent wooden and concrete sleeper tracks; test lengths of approximately 400 yd. were used including about 500 sleepers. The recording equipment was based on a Wheatstone bridge circuit housed in a box alongside the track.

Current was supplied from a battery and the recording voltmeter was driven by a 30-day clock. It was therefore only necessary to visit each test site at monthly intervals to change the charts, wind up the clock and make a calibration. Several instruments of this kind had been in use up to three years with the minimum amount of trouble. Measurements on the concrete and wooden sleepered track were taken alternately every 30 min. by means of a contact in the clock mechanism.

After the three-year trial there is no evidence of the rubber rail pads failing in the track either mechanically or electrically. Great care has been taken in the design of the rubber components used with the fastenings. It is therefore suggested that concrete sleepers, with suitable fastenings, may be used with confidence in track-circuited lines.

★

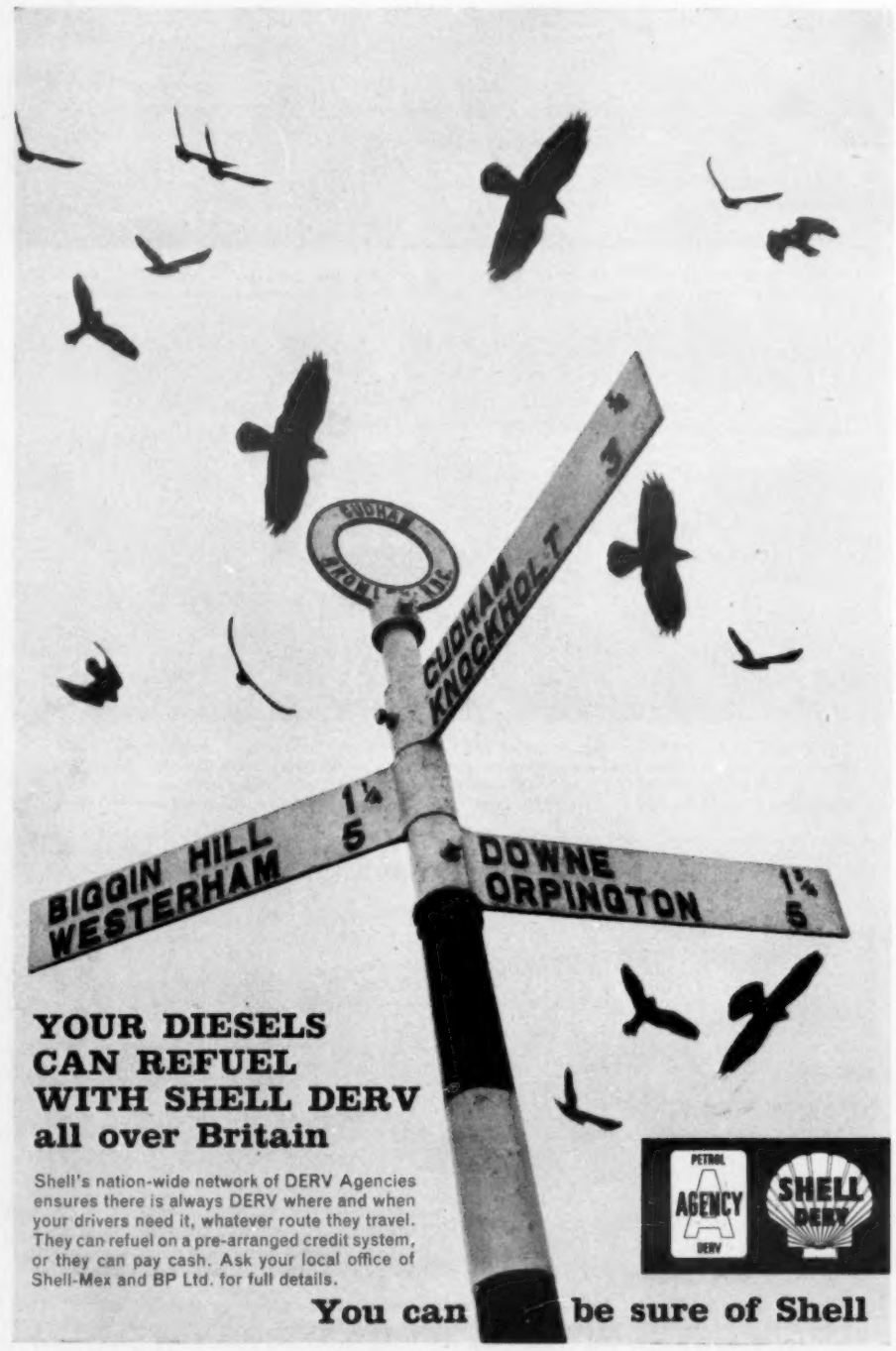
TIMKEN-FAFNIR AGREEMENT

Fischer Bearings Sold to U.S. Company

CONCLUSION of an agreement between the Timken Roller Bearing Company, Canton, Ohio, U.S.A., and the Fafnir Bearing Company, New Britain, Connecticut, U.S.A., will shortly result in the formation of a new company, Fafnir Bearing Co., Limited (U.K.), which will purchase all the assets and business of one of Timken's British subsidiaries, Fischer Bearings Co., Limited, Wolverhampton. Fischer Bearings, until recently owned by the former British Timken, Limited, is a ball bearing manufacturer, as is Fafnir, and employs approximately 1,500 people in its factories in Wolverhampton and Hednesford.

Timken officials stated that the sale of Fischer is in pursuance of Timken's intention to concentrate solely on its principal product, tapered roller bearings. Timken will, however, continue for the present to distribute Fischer bearings for replacement purposes in England through its subsidiary, Timken Stockists, and in its foreign branches in Australia, South Africa and Canada.

The purchase of Fischer by Fafnir marks the American company's first entrance into foreign manufacturing. It employs 5,000 people in its factories in New Britain, where it is the largest independent manufacturer of ball bearings in the United States. It is intended that Fafnir's British products will be marketed under the Fafnir name and that the business will be expanded to take care of the expected increase in demand in both the British and world markets, including particularly the overseas factories of Fafnir's American customers.



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SOCIAL AND PERSONAL

British Aluminium

LORD PLOWDEN, chairman of the Atomic Energy Authority and a member of the Economic Planning Board, has been appointed chairman of the British Aluminium Co., Limited. He succeeds Sir Ivan Stedeford, who, however, remains an alternate director to Lord Plowden.

* * *

Mr. C. M. Cock, who recently retired from the English Electric Co., Limited, has been appointed to the board of Brooke Marine, Limited, Lowestoft, as deputy chairman and has also joined the board of Dowsett Holdings, Limited.

* * *

Mr. E. R. Brown, M.I.Mech.E., M.I.Loco.E., who has been appointed works manager, Crewe, London Midland Region, B.R., joined the railway as an apprentice at Derby locomotive works in 1924. Following experience in the locomotive drawing office he was transferred in 1931 to the chief mechanical engineer's headquarters at Euston

Mr. E. R. Brown

when he became personal and technical assistant to the chief mechanical engineer. In 1941, Mr. Brown was appointed chief inspector (aircraft), locomotive works, Derby, and 11 months later became assistant to works superintendent (inspection) in the same works. He was appointed assistant works manager, Horwich, in 1946 and to a similar post at Crewe in 1948. In 1956 he returned to Horwich as works manager. Mr. Brown is a member of various technical committees of the British Standards Institution and has taken part in several international conferences on standardisation. He is the holder of the Alfred Rosling Bennett award for a paper, "Limits and Fits from the Railway Point of View," given before the Institution of Locomotive Engineers.

* * *

Mr. M. A. Watson has been appointed assistant to the sales manager of Morris Commercial Cars, Limited.

* * *

Mr. Ian S. MacGillivray has been appointed sales contract manager of Albion Motors, Limited, in succession to the late Mr. D. MacLachlan.

* * *

Mr. H. H. Mason, A.M.I.Loco.E., has been appointed district motive power superintendent, Bank Hall (Liverpool), London Midland Region, B.R.

* * *

Mr. H. V. Britten retires as manager of the Railway Passengers Assurance Company after 47 years' service and Mr. W. Trotter, the secretary, now becomes manager.

* * *

Mr. M. B. Sellars, assistant divisional shipping manager, Southampton, has been appointed divisional shipping manager and harbourmaster, Newhaven, vice Mr. P. Murdoch.

* * *

Dr. J. Sharp Grant, medical officer, Eastern Region, British Railways, has been appointed chairman of an independent commission which is to inquire into the Rhodesia Railway Medical Fund.

* * *

Recently retired from London Transport, where he was assistant superintendent, north-west division, Central Road Services, Mr. G. King came over with the Renown Traction Co., Limited, a London independent absorbed by the L.P.T.B. in 1934. Renown, whose garage was at East Ham, operated on route 15.

* * *

At a ceremony at the Grand Priory Church in Clerkenwell on Thursday this week, Sir Brian Robertson, chairman of the B.T.C., was to be invested as commander (brother) in the Order of St. John. Mr. J. B. Burnell, operating manager, Central Road Services, London Transport, was to be made an officer (brother).

* * *

Mr. T. R. Barron has been made movement assistant to the line traffic manager (Great Eastern), Liverpool Street, B.R. He was formerly traffic costing officer, Cambridge. Mr. A. B. Middleton, formerly passenger assistant to the line traffic manager (Great Eastern), has been redesignated trains assistant in the same department.

* * *

Following the death of Mr. A. Hilling, head of the transport and shipping department of Colvilles, Limited, since 1930, Mr. Albert Thompson has been appointed transport manager. He has over 30 years' experience, having begun as a boy in the company's shipping department. He served for six years, 1939-45, in the Royal Artillery at home and overseas. He is well known in railway, road and shipping circles and represents the Colville group on the B.I.S.F. transport committee.

* * *

We regret to record the death, aged 60, of Mr. Nevil Shute Norway, B.A., F.R.Ae.S., who, apart from establishing a considerable reputation as an author under the name of Nevil Shute, had a distinguished career in the aeronautical field. After serving with the de Havilland Aircraft Co., Limited, as a calculator, 1922-24, he became chief calculator to the Airship Guarantee Co., Limited, on the construction of the R100 in 1925 and was made deputy chief engineer in 1928. In 1931 he founded Airspeed, Limited, and was its joint managing director until 1938, during which time it produced the Ferry, Courier and Envoy, the last being the civil forerunner of the Oxford military trainer. During the 1939-45 war he served as a lieutenant-commander in the R.N.V.R. and undertook a number of special duties.

The Machine Tool Trades Exhibition will be held at Olympia from June 25 to July 28, 1960.

* * *

Mr. G. G. Minorgan has been appointed station operations manager for Trans-Canada Air Lines at London Airport.

* * *

A group director of research has been named by the Pressed Steel Co., Limited. He is Mr. John L. Lutyens, M.A., A.M.I.Mech.E. His appointment carries a seat on the motor car body divisional board.

* * *

Mr. W. E. Alberts has been appointed vice-president and assistant to the president of United Air Lines. In 1954 he served as a consultant to British European Airways on engineering and maintenance functions.

* * *

Colonel Maurice Buckmaster, O.B.E., public relations manager of the Ford Motor Co., Limited, retires at the end of this month after more than 30 years' service with the company. He is to join a firm of business consultants as an associate.

* * *

The Wakefield Castrol group announces the formation of a group works division, responsible for the overall administration of its 12 production centres in the United Kingdom. Mr. C. R. Woodfield has been appointed general manager of the new division.

* * *

Mr. R. C. S. Low, whose appointment as works manager at Horwich, London Midland Region, has been announced, was educated at Rugby School and Balliol College, Oxford, and joined the former L.M.S.R. in 1934 as a pupil at Crewe locomotive works. In 1936 he was appointed progress assistant (engine repairs) and was in charge of the initial examination staff. He left the railways in 1939 shortly before the outbreak of the war to take up a position in outside industry, but having a T.A. commission he was called up and served throughout with the Royal Engineers. Mr. Low rejoined the railways in 1945 in the production office at Derby locomotive works and in 1946 was appointed assistant for inspection. He was transferred to Crewe on similar duty at the end of the same year and took over the additional responsibility of apprentice training. In 1948 he returned to Derby as locomotive maintenance assistant until the end of 1951, when he became assistant works manager at Horwich locomotive works. Mr. Low returned to Derby in 1956 as diesel assistant to the chief mechanical and electrical engineer.

Mr. R. C. S. Low

* * *

Lord Douglas of Kirtleside, chairman of British European Airways, has accepted the invitation of the Minister of Aviation to continue in that appointment for a further two years.

* * *

The general manager of Salopia Saloon Coaches, Limited, from January 1 is Mr. E. T. Davies, a director of the firm. Mr. Harry Richards, O.B.E., remains as chairman and managing director.

* * *

Mr. W. H. (Billy) Gilbert retires next month from the position of chief engineer of Guy Motors, Limited. Mr. Gilbert, who has served the company continuously for 42 years, will continue to act as a consultant.

* * *

Mr. A. E. Reddell has been apointed a director and director-in-charge of the Weymouth works of Vickers-Armstrongs (Engineers), Limited. Mr. F. A. E. Pritchard is appointed a special director and general manager at Weymouth. Mr. J. Ferguson Smith is appointed a special director of Vickers-Armstrongs (Aircraft), Limited.

Mr. Alan Robertson (third from left), managing director, National Benzole Co., Limited, and Mr. Edward Young (second from left), author of "Forty Years of Motoring," chat with the two longest-serving members of the company's staff, Mr. F. R. Edwards (left) and Mr. B. E. Bolton (right) at a publication day party at Mercury House, Knightsbridge. The book was produced to commemorate the 40th anniversary of National Benzole

On January 1, Mr. Claud Barrington took up his new post of chairman of the B.T.C.-controlled Atlantic Steam Navigation Co., Limited. He is now a part-time member of the British Road Services board of management and chairman of B.R.S. (Pickfords), Limited. Mr. Harold Elliott, a member of the British Road Services board of management, has been appointed a director of Atlantic Steam Navigation.

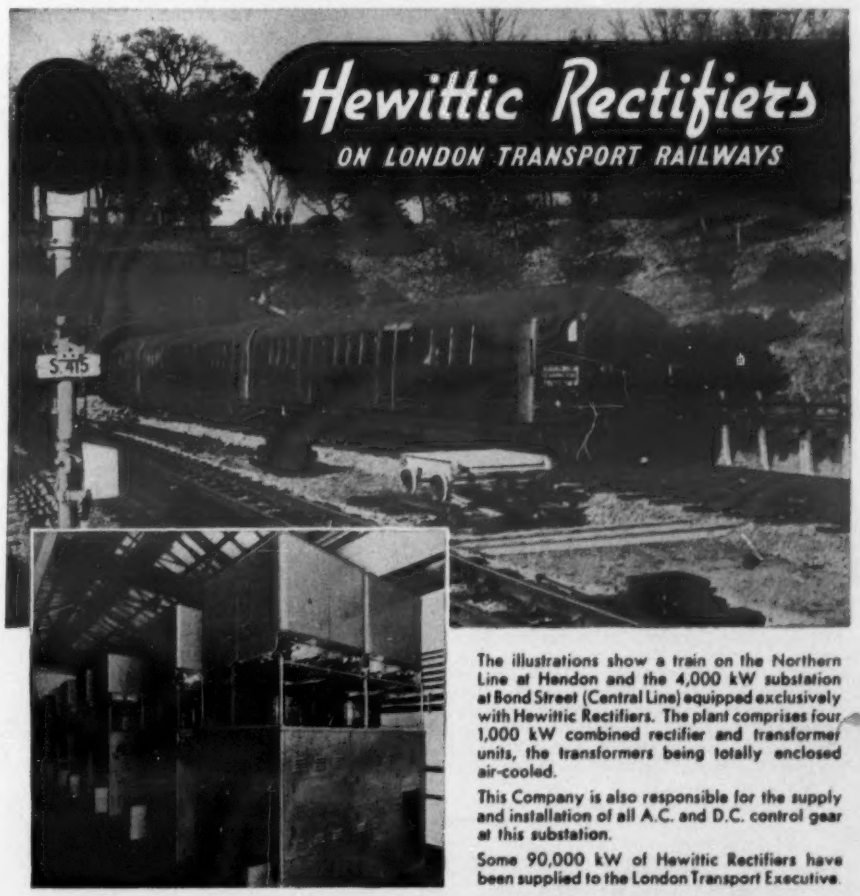
* * *

Mr. Harold Riggall, D.L., J.P., has resigned from the chairmanship and from the board of directors of Davey, Paxman and Co., Limited, on his retirement from the managing directorship of the parent company, Ruston and Hornsby, Limited. Sir Percy Sanders, C.B.E., D.L., deputy chairman, has resigned for health reasons, but remains a member of the board. Mr. W. J. Ruston has been elected chairman, and Mr. V. R. Prehn has been elected deputy chairman. [In making this announcement in our January 8 issue the reference to Davey, Paxman was inadvertently omitted. —Editor.]

ELECTRIFICATION on the FRENCH RAILWAYS

NEXT STAGE — AVIGNON - NÎMES

BR 772



The illustrations show a train on the Northern Line at Hendon and the 4,000 kW substation at Bond Street (Central Line) equipped exclusively with Hewittic Rectifiers. The plant comprises four 1,000 kW combined rectifier and transformer units, the transformers being totally enclosed air-cooled.

This Company is also responsible for the supply and installation of all A.C. and D.C. control gear at this substation.

Some 90,000 kW of Hewittic Rectifiers have been supplied to the London Transport Executive.

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IMPORTANT CONTRACTS

More Big Jets Sold

FINAL details of the agreement to purchase from three to five Boeing 707-720B medium-range jet air liners by Lufthansa are about to be completed. The German operator, which is a member of the new Air Union combine of European airlines, already has four long-range Boeing 707-420 aircraft on order, the first of which is due for delivery this month. Japan Air Lines has decided to purchase a fifth Douglas DC8 jet air liner. The first of four similar machines already ordered is due for delivery in June.

Ford Coach for Excelsior Moscow Tours

An outcome of the record-breaking trip from London to Moscow and back made in a Ford Thames coach last October, Excelsior European Motorways, Limited, Bournemouth, has ordered a Duple-bodied Thames coach with which it is to inaugurate a 15-day Moscow tour this summer.

More Pyrene Crash Tenders Ordered

The Pyrene Co., Limited, has received a Ministry of Aviation contract for 25 Pyrene airfield crash tenders for service on airfields of the Royal Air Force. Mounted on the Alvis Salamander six-by-six chassis with four-wheel power-assisted steering and Rolls-Royce 240-b.h.p. eight-cylinder petrol engine, the unit has a total foam output of over 5,000 g.p.m. for more than two minutes.

Orders for Guy Wulfrunian

Guy Motors, Limited, has announced further orders for its new front-entrance Wulfrunian double-deck bus, which has independent air suspension and disc brakes. In addition to the 25 vehicles now being built for the West Riding Automobile Co., Limited, orders have been received from several other operators, including Wolverhampton, Accrington and Bury Corporations and West Wales Motors.

Materials for Polish Railway Electrification

The first overhead track equipment under a £2,750,000 railway electrification contract awarded through the Polish Government agency, Elektrim, has been dispatched by British Insulated Callender's Construction Co., Limited, one of the three British manufacturers who are parties to the agreement. The other companies concerned are English Electric and Metropolitan-Vickers, who under the terms of the agreement announced last July were jointly with B.I.C.C. to supply overhead line equipment and 20 electric locomotives and to licence the manufacture of additional locomotives in Poland.

B.M.C. Taxicabs for North America

A new invasion of North America is being undertaken by the British Motor Corporation with the appointment of distributors in Detroit to sell the Metropolitan-type Austin taxicab in major cities across the Atlantic. Over 50 of the latest type, which has the B.M.C. 2.2-litre diesel engine and Borg-Warner automatic transmission, have been delivered and are now operating in Detroit, as well as in Philadelphia, Boston, New York and San Francisco. The striking economy and durability of the diesel engine and the extreme manoeuvrability of the British vehicle compared with the converted large cars of domestic manufacture are strong selling points.

Ghana Orders British Vehicles

Leyland group companies have been successful in winning substantial contracts from Ghana for goods and passenger vehicles, despite strong competition from West German manufacturers. The latest order, placed by the Government of Ghana, is for 180 Albion goods vehicles, valued at about £500,000, following that for 150 Leyland buses valued at about £1 million. During the past four weeks, the Leyland and Albion concerns have also booked orders from home operators for bus chassis worth over £250,000. These contracts cover Leyland Atlantean, Titan and Leopard and Albion Aberdonian vehicles for various operators and 15 underfloor-engined Albion Nimbus medium-capacity chassis for Maidstone and District Motor Services.

A New Shell Venture

The interests of the Royal Dutch-Shell group of companies and two American concerns, Continental Oil Company and the Union Stockyards and Transit Company of Chicago, in the liquefied natural gas field are to be developed through the medium of a jointly owned company to be named Conch International Methane, Limited. Continental Oil and Union Stockyards, through research carried out by their joint subsidiary, Constock International Methane Company, have acquired valuable experience and patents in the entirely new field of transporting methane by sea as a liquid. As a result of this work, Constock and the U.K. Gas Council participated through a joint company, British Methane, Limited, in a project to ship liquid methane from Louisiana to the United Kingdom. It will be recalled that the first cargo was successfully carried in February, 1959, by the *Methane Pioneer*, a tanker jointly owned by Constock and the Gas Council, since when this ship has continued regularly to deliver cargoes of liquid methane to the North Thames Gas Board's special depot at Canvey Island.

SHIPPING and SHIPBUILDING

Hopes of Further U.S. Talks

WHILE he was in the United States recently, Mr. Ernest Marples, the Minister of Transport, found time for a two-hour discussion in Washington with officials of the State Department and the Departments of Commerce and Defence on shipping questions. The main outcome is that he is said to be optimistic of a follow-up meeting to the nugatory Washington conference of last June. Mr. Clarence Morse, vice-chairman of the United States Federal Maritime Board, is to visit London early in March for a meeting of the Inter-Governmental Maritime Consultative Organisation, and Mr. Marples hopes to see him then.

Notable Record of Liverpool Firm

FOUNDED by a widow in 1760, A. Robinson and Co., Limited, Knowsley Road, Bootle, Liverpool, 20, is celebrating its bi-centenary this year. It claims to be presently manufacturing over 75 per cent of the bridge controls used in world shipping. Two hundred years ago Ann Robinson provided anchors, sails, galley stoves and other chandlery to merchantmen and ships of the line, so from 10 years before Nelson joined the British Navy, through 10 reigns of the British monarchy, Robinsons have provided unbroken service to the maritime industry.

Local TV Programmes for "Oriana"

PASSENGERS in the new Orient Line 40,000-ton luxury liner *Oriana* will be able to enjoy local television programmes at ports of call throughout the world, and closed-circuit telecine and live television programmes while the ship is on the high seas. The installation provides for the reception of television broadcasts employing the 405-line system used in Britain, the 625-line system used in Australia and the greater part of Europe, and the 525-line system used in the United States, Canada, Japan and some South American countries. Wherever alternative programmes are available viewers can change from one channel to another by using the normal channel selector switch.

Selling for Scrap

SOONER or later shipping must arrange its affairs internationally. A lot of machinery already existed, but we were still far too insular. Shipowners must try to agree as nations. These were the remarks of Sir Nicholas Cayzer at a dinner in Newcastle upon Tyne last week. Sir Nicholas, president of the Chamber of Shipping, suggested that urgent thought should be given to encouraging the sale of ships for scrap as opposed to selling them for trading. Shipowners of all countries had become accustomed to sell at the best price, but with the present surplus of tonnage it seemed stupid not to scrap as many old and ageing ships as was possible. Sales for trading could put very cheap ships into the hands of foreign operators.

First P.S.N. Tanker Launched

ON Friday last week Harland and Wolff, Limited, launched at Belfast its biggest tanker from those yards, the 46,000-ton *William Wheelwright* for the Pacific Steam Navigation Company. She is the first tanker for that line and her name is that of its founder; she was originally ordered by Shell Tankers, Limited, but will now be on demise charter to that company. A 28,000-ton tanker, the *George Peacock*, is also building at Harland and Wolff for P.S.N. and still larger tankers than the 46,000-tonner are on order.

The *William Wheelwright* is of usual tanker design with machinery aft, poop, bridge and forecastle decks connected by fore and aft gangways, boat deck aft and upper and navigating bridge decks amidships. The hull is constructed on the longitudinal system of framing with two longitudinal bulkheads and is divided by athwartship bulkheads into 12 sets of cargo oil-carrying compartments. She is 715 ft. long b.p.

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FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Westinghouse Brake and Signal

In the year ended October 3, 1959, the group trading profit of the Westinghouse Brake and Signal Co., Limited, rose to a record £2,557,488 (£2,035,101) after depreciation £808,935 (£669,608). Net profit was £1,286,795 (£879,235) after tax £1,121,503 (£997,683) and loan and bank overdraft interest of £149,190 (£158,183). Ordinary dividend is 11 per cent (10 per cent).

Bristow Helicopters

The Airwork group has acquired the entire share capital of Bristow Helicopters, Limited. The Bristow helicopter fleet of 10 Whirlwinds, six Widgeons, seven Bell 47G.2s and one Alouette, and its two fixed-wing aircraft, a Beaver and a F.50 Twin Bonanza, will continue to operate on current overseas contracts. Mr. Alan Bristow will remain as chairman and managing director of the company, and his co-directors will be Messrs. M. D. N. Wyatt, F. A. Laker, G. Russell-Fry, A. G. Green and J. N. Woolley.

Leyland Motors

Leyland Motors, Limited, announces that the group trading profit for the year ended September 30, 1959, was £6,277,135 (£5,837,646). Net profit was £2,685,630 (£2,045,745) after charging depreciation £1,261,587 (£1,228,550), profits tax £490,600 (£842,276) and income tax £2,156,137 (£2,237,982). Prior year's tax provision not required £223,002 (nil). Transfer to general reserve is £1,770,705 (£1,275,000). Unappropriated profits carried forward £970,063 (£789,581). Dividend is 3s. per £1 ordinary stock unit.

The British Railways 11-ton roadrailer (developed in conjunction with the Pressed Steel Company) as a road trailer; the rail wheels at the rear enable it to operate in a trailing-axle train of wagons on the railway for the trunk haul section of door-to-door journeys. Editorial note on page 1

Plain facts!

reasons why the

KARRIER 'BANTAM'

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(Petrol or Diesel)

meets every transport need

Operating Efficiency
Full-forward control, with new wide-vision cab over front springs and power unit forward of front axle provides exceptional bodyspace and balanced load distribution.

Sturdy and Powerful
Ample power is provided by either a fully-proved 4-cylinder petrol or diesel engine, whilst chassis, body and cab are all built to endure the most gruelling working conditions.

Economical Performance
The Karrier 'Bantam's' combination of strength, lightness and accessibility reduces both running and maintenance costs to an extremely low level.

Salient Features
Powered by either 4-cylinder o.h.v. 53 b.h.p. petrol engine embodying chrome cylinder bores for phenomenal life, or 54 b.h.p. 4-cylinder light diesel engine for great economy.

Full-forward control, giving exceptional manoeuvrability.

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Over 11′ bodyspace on 8′ 2″ w.b. chassis; over 14′ on 10′ 2″ w.b. chassis.

Powerful hydraulic brakes.

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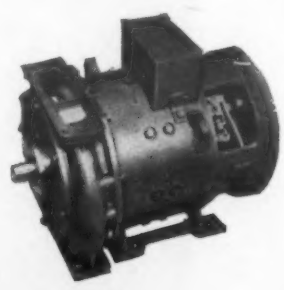
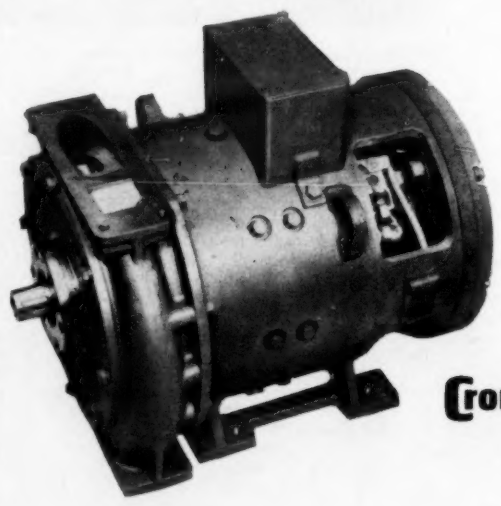
DESIGNING

AND MAKING

TRACTION EQUIPMENT





You, as an engineer, know that there can be no sharp dividing line between designing and building. A good design incorporates experience gained in making, testing and commissioning similar equipment in the past. And, of course, it is also shaped by the experience of all sorts of people using the earlier designs under a variety of conditions that could not be simulated in any test laboratory.

To a long-established company such as Crompton Parkinson this process of feedback of information to the designer is fundamental. In traction equipment, where space and weight must be kept down and yet robustness and accessibility are at a premium, it shows up in the simplicity and elegance with which these conflicting demands are reconciled. As, for example, by the special design of the ventilation of this railway compressor motor. The air circuit is continued by trunking to serve the compressor and its intercooler as well. In this design we were able to make direct use of the experience we had gained with earlier auxiliary motors—as well as more indirectly from hundreds of equipments built for main line locomotives, shunters, motor coaches and trolley buses.

Crompton Parkinson LIMITED — TRACTION EQUIPMENT

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